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The Column and the Arch.

THE book brought out by an American critic, Mr. W. P. P. Longfellow, under the above title,* is not a treatise on the statics of the column and the arch, but an addition to the number of essays which have been written on the fascinating subject of the changes in architectural style and language by which columnar architecture gradually became transmuted into arcuated architecture, and the influences which led to the change. The plan of the book is, however rather peculiar. It may be permissible, in tracing the direct history from column to arch, to pass over the Byzantine style on the ground that "it was a collateral development, and outside the cycle which, beginning with Greek architecture, returned upon itself in the Renaissance." Byzantine architecture is no doubt a kind of separate chapter, having its own beginning and ending apart from the great central progress of architecture in the Christian era. But we cannot regard it as equally reasonable to omit Gothic, and regard it as "a splendid growth that structurally was the completion of the Romanesque, but as a matter of form, was *hors de ligne*, like the Byzantine." On the contrary, not only was the complete Gothic a direct development from the Romanesque, but it affords the most striking phenomenon in the history of the column—of its gradual transformation from the classical shape to the long slender decorative wall shaft, the historical connexion of which with the classical column is nevertheless traceable step by step. And Gothic fills a far larger place in architectural history than Byzantine. To say that "the logical predecessor of the Renaissance was the Romanesque" is hardly the right way of putting it. It is a fact that the Renaissance began on Italian soil, and that on Italian soil the pointed Gothic never received anything but a partial and half-hearted development; but if the Gothic had been developed as fully in Italy as in France, that would not have prevented the Renaissance. The revival of the classic forms of which the principal remains were to be found on Italian soil, and which was brought about as much by literary and philosophic as by architectural influence, would have taken place just the same. And a book on the column and the arch, which omits the most complete and logical development of the arch which the history of architecture has produced, certainly falls somewhat short of the ground professedly covered by its title.

Nevertheless this is a very interesting book, as any book at all well written on such a subject could hardly fail to be. For the column and the arch represent, broadly speaking, the two main forms in which men have endeavoured to give æsthetic expression to the structures which they have erected on the face of the earth since the first dawn of civilisation. In fact, it is hardly possible for us to conceive of any structure which does not come, essentially if not apparently, under either post and lintel or arch construction. The late Professor Clifford thought there might conceivably be a world in which two and two made five. So an architectural theorist might imagine a world in which structures were roofed in on some other principle than either beam or arch; but he would be nearly as hard put to it to define the possible structure as Clifford would have been to define the possible conditions of his imaginary world of the higher mathematics, or of space in four dimensions. Everything comes either under the head of vertical support from below or resistance to pressure against the sides. And when we think of the first beginning of the column—the mere wooden prop, or the stone pier left in a rock-cut cavern, the refinements of design into which it has been shaped form one of the most remarkable examples of the shaping power applied by man—"the most plastic little creature on the planet," as Carlyle said, to give interest and expression to things originally of mere utility. There is, however, an additional interest in architectural history derived from the fact of the illogical mingling of the two methods, the column and the arch, in one style. This, if we come to think of it, is one of the most curious and picturesque facts in the history of style. If we could catch a highly civilised people who had never seen a column, and set them to building arched construction, we might then have arrived at an arched style pure and simple, with no trace of the æsthetic use of the column. The Byzantine architects came nearest to it; in some of their smaller and plainer structures they realised it, in fact; but in the greater and more ornate ones they could not shake off the Grecian column; and in the complete pointed Gothic the Grecian column is still there, disguised as the shaft and cap. And all this indirectly resulted from the fact that the Romans were an uninventive race artistically, and though they commenced construction with the arch, the Greek order had got upon their minds; they were accustomed to regard it as the symbol of architectural style, and mingled its æsthetic semblance with the real arched construction. It was totally illogical, and in a good many Roman buildings it is so palpably a pretence as to be annoying. Yet this irregular alliance has rendered architecture since the Roman era much more interesting and picturesque than it would probably otherwise have been. But for it, we should have had neither the Romanesque nor the Gothic styles.

In dealing with the earliest known column, that of Egypt, the author emphasises a point in regard to it which has not, as far as we remember, been put in quite the same way before. Every one is familiar with the peculiar method of connexion between the Egyptian column and lintel, by means of the plain cubical die on the top of the capital, on which the lintel rests. But Mr. Longfellow suggests that the interposition of this block puts the Egyptian capital in a different category from all other capitals in architecture, which expand under the lintel, as it

* "The Column and the Arch; Essays on Architectural History." With Illustrations. By P. P. Longfellow. Sampson Low, Marston & Co.

to afford a better foundation for it and to give apparent strength to the junction of column and lintel. The Egyptian block, which occupies the position of the abacus in the Greek column, instead of expanding over the column, recedes, and is in fact reduced to the thickness of the lintel; the abacus being in some examples even less than the width of the column. The capital is thus purely ornamental, its expansion has not even the appearance of having a practical object. Considering that the spreading Egyptian capital was undoubtedly the origin or suggestion of the Corinthian capital, which appears as decoratively enlarged to carry the lintel better, it is curious to consider that the original form should have no such function. What is the explanation? The author finds it in the fact that the Egyptians were obviously a flower-loving people, making great use of flower forms in all their decorations, and the lotus capital was simply a decoration, and not a decorative treatment of a constructional feature. From that point of view the die on the top may be regarded as intended to keep the ornament out of harm's way; to prevent it bearing on the projecting leafage of the capital and possibly cracking it. The painted representations of columns give at all events no better explanation of the origin of this unusual feature. As the author observes, "the period of immaturity still eludes us." It is a rather curious omission in this Egyptian chapter, that not a word is said as to the plain sixteen-sided columns at Benihassan and Deir el Bahari.

The next chapter bears the title "Græco-Roman Architecture," as representative of the view here suggested, that Greek and Roman architecture are incorrectly or unnecessarily classified, in the ordinary nomenclature, as two styles; that the Roman was only a continued development or evolution from the Greek. As far as we regard the Order alone this is true; but the combination of the arch with the order puts Roman architecture in a different category from Greek in that respect. The distinguishing characteristics, however of Greek and Roman architecture are very well discriminated. The peculiar conservatism and finish of Greek architecture are well described, in contrast with modern practice:—

"The oldest temple at Selinus and the Parthenon at Athens were perhaps two hundred and fifty years apart, and the builders of one had probably never seen the other, yet they do not differ so much in their ordinance as the American carpenter's church differs from the city original which he fancies he is faithfully copying. . . . To an American who may have seen four or five styles adopted and dismissed in succession, as fashion after fashion has spread over his country, and innumerable forms of buildings devised in each, the fidelity with which the Greeks clung to their type may seem impossible. They sacrificed original invention, consciously or not, which we value above everything else; but in exchange for it they secured perfection, for which we unfortunately do not care."

Perhaps one influence which led to this conservatism and consequent perfecting of a type was the religious one. With the Greeks the temples were almost the only architecture worth counting. The theatres, hollowed in a hill-side, could hardly be called architecture; the houses were probably architecturally insignificant; architecture received its real development in the temple alone. Mr. Herbert Spencer has told us that the primitive architect was probably the priest, as the person who alone knew the will of the deity as to the design and construction of his house; and it seems at all events not improbable, especially in view of some of the utterances of Vitruvius (if there is still a Vitruvius), that the special form of the Doric temple was considered as a sacred one, and not to be departed from, on ritualistic grounds; hence the architects were confined to perfecting it in detail without departing materially from the established form.

Mr. Longfellow has some good remarks on the Romans and their relation to architecture. He raises the question whether there was really a Roman architecture made by the Roman race, and suggests the negative; it was architecture carried out by Greek hands at the bidding of the Roman building-owner; a view for which there is a good deal to be said. The real Romans as we see them in history were, he thinks, "singularly like the English of the nineteenth century" (a comparison which has been made before by English writers):—

"Masterful in their ways, confident in their power and natural right to rule the world, they were a vigorous, hard headed, practical people, with a great gift for administration and great political sagacity. As they succeeded they grew grasping, as is the natural way of such people, and when they grew rich they grew ostentatious and vainglorious. By the time they had conquered Greece, they had become sufficiently luxurious to covet art as the *nouveau riche* of to-day covets it; all through the second century before Christ the portable works of art in Greece were gathered into Rome, as Napoleon brought his plunder of pictures and statues from Italy, and apparently from the same motives. They pursued art because it tended to magnificence, and literature because they thought it due to themselves. But they were too practical to become artistic or literary, too gifted for command to do any work but that of governing."

We presume the author forgot in the course of the sentence the comparison with which he started, as the sentence about literature can hardly be taken to apply to England, any more than the example of Napoleon in plundering conquered countries of their works of art, which we have never done; we have bought them at a long price. In other respects the parallel is good enough, though we have not had Greeks to do our art-work for us. The author's conclusion is that the art of the Romans is that of the Roman Empire, not that of the Roman race. "Doubtless the men of Rome themselves were responsible in great degree for the rapid development of architecture under their empire. They probably influenced it as American men of business in our time influence the new architecture of our cities. They were the clients, exacting and despotic clients, we may be sure; their demand must have called out the supply, and determined its character." This is a view worth considering; but it does not quite account for the fact of the remarkable coarseness of Roman detail and mouldings compared with Greek—a point of difference which the author omits to mention. This characteristic seems rather to point to the imitation of Greek detail by a race of inferior refinement of perception; though there can be little doubt that Greek artists were considerably employed by the Romans, but to what extent we have no means of knowing. It may have been likely enough, too, that the tastes of Greek artists themselves would be gradually deteriorated under the influence of Rome.

Mr. Longfellow is nevertheless rather disposed to overrate Roman architecture and to think that it has been too much criticised for want of sincerity, and that the modern doctrine of sincerity in building, "of the faithful correspondence of decoration and appearance to the reality of construction," finds little support from either Greek or Roman. This is certainly an exaggeration as regards Greek architecture, which was quite as sincere as Gothic. The author adduces the case of the joints of the columns, which only really bore upon each other for a space round the rim of the drum, "and all the inner surface is cut away roughly so as to escape contact and leave the greater part of the joint hollow and open." But this was at all events the best way to prevent any chance of rocking of the drums of the columns on each other, and it would be a serious practical error to think that, because the drums only rested completely on their outer portions, they were no stronger than a *hollow* marble column with that degree of contact surface, or that the inner portion of the drum was doing no work. And when he compares this to the concrete filling of Roman walls, he forgets the rubble filling and ashlar skins of many a Gothic pier of that Mediæval style which he has just lauded for its sincerity. As to the statement that the spreading abacus of the Doric column is only a pretence, and that the weight of the entablature is taken by a shoulder, or bench, a fraction of an inch high, "a miniature of the die set visible on the Egyptian capital," we think this should have been supported by some evidence in photography; if this is true, it is surprising that so careful an observer as Mr. Penrose says nothing of it. And the statement that this is the *scamillus* of Vitruvius is absurd—the author cannot have looked properly at the passage in Vitruvius, which indubitably refers to the base and not to the top of the column,* and the word is accompanied by the adjective *impar*. Mr. Penrose's conclusion, that the *scamilli impares* were the uneven lowest drums of the columns—uneven because of the curve of the step and the inclination of the whole column inwards, is to our thinking satisfactory, not to say incontrovertible. It is perhaps because it is his that the author takes another view; as we observe there is a tendency among American archæologists to differ from anything that has been promulgated by English scholars. In architecture, the Americans swear by the French; in archæology, by the Germans.

The account of the early development of the Romanesque style in Rome is well written. The author observes that the Romans even after Constantine undoubtedly preferred the column and order, and that when they first lined the naves of their churches with arcades instead of colonnades, economy and ease of construction were their determining motives; "columns could be stolen from distant towns, but it was not so easy to bring whole orders." Coming to the later and true Romanesque period, we notice the remark on the uniformity of scale in the colonnades, the columns of the arcades generally averaging from 10 to 12 ft. apart in all instances. "We cannot say what, in the consciousness of the builders, gave the scale to all these churches—whether it was the convenience of con-

* We find for instance—"His" (*i.e.*, the scamilli) "perfectis in suis locis, spiræ collocentur"; such an expression obviously could not refer to the top member of a column; and the word *scamillus* (*i.e.*, "foot-stool") in itself implies something on the ground.

structing the arches, which masons of small skill would not willingly build larger than these, or the size of the columns which were at their disposal, or a combination of the two." We should surmise that the size of the columns was the leading factor; in other words, that there was a crude feeling for scale still surviving. We quite concur in the opinion expressed, on a later page, that the cruciform type of church was not Early Christian; "in the Roman type the transept was not two arms but one body; the nave did not pass through it, but abutted against it, as the staff of a crutch abuts against the shoulderpiece;" a good point of discrimination.

The chapters on Romanesque architecture are in fact the best portion of the book. But we like and agree in the main with what is said as to the use of the orders in Renaissance architecture, and also in the summing up of the subject at the close of the chapter VII. ("The Renaissance"), and the recognition of the artistic importance of the Renaissance, so long denied during the present century. "Artificial as it was, it could hardly have succeeded as it did in a living and practical art like architecture, if it had nothad the impulse of the world be hindit."

St. Peter's, that building of never-ending interest, is the subject of a separate final chapter, calculated to be very useful to the general reader who is interested in architecture, as it is both critically sound and generally intelligible. We notice the suggestion that the employment of the sixteen concealed masonry ribs connecting the inner and outer shells of the dome is really a construction Gothic rather than Classic, as collecting the main thrust on sixteen points instead of having it distributed over the whole base of the dome. There is no harm in saying so; it depends on how you look at it; the fact hardly alters the essentially anti-Gothic character of the design.

We recommend this book to the attention rather perhaps of general readers interested in architecture than of architects; who, however, will find it an interesting book to read, though they will learn nothing from it, while the general reader may. As before observed, the omission of Gothic from the scheme is a curious contradiction to the assumption of the title; but as far as it goes it is a thoughtful book. We may conclude with the following reflection on the respective merits of the column and the arch, with which we are disposed to agree:—

"It is not easy to decide, nor need we, which of the two systems, that of the beam or that of the arch, lends itself most to great architectural effects. But for some reason or other a column, if it be large enough, carries a greater impression of stateliness than any other architectural form. This may be due to its uprightness and its isolation, which give it an air of immovable supremacy, like that of a tall man towering above a crowd. At any rate, I suspect that the most majestic architecture that has ever been built, making due allowance for mere scale, has been columnar."

We must regret the absence of an index; an omission which ought not to occur in a modern book.

THE REBUILDING OF FISHMONGERS' HALL.

IN connexion with the visit of the Architectural Association to the Fishmongers' Hall last Saturday it may be of interest to recall the following facts as to its rebuilding and as to the interesting connexion of Sir Gilbert Scott with its erection in 1832.

Taking the latter first, Sir Gilbert Scott in his autobiography writes—

"Some time in 1832 I entered the office of my very excellent friend, Mr. Henry Roberts, who had recently obtained by competition the appointment of architect to the new Fishmongers' Hall at the foot of London Bridge.

Mr. Roberts had, subsequently to his original period of pupilage, been for a considerable time in the office of Sir Robert Smirke, whose tastes, modes of construction, and method of making working drawings, he had thoroughly imbibed. He had subsequently made the lengthened continental tour customary in those days, and had not, I think, very long been in practice since his return. He was in independent circumstances, and was a gentlemanly, religious, precise, and quiet man.

I was the only clerk in the office at the time, though he subsequently took a pupil, so that I had the advantage of making all the working drawings of this considerable public building from the foundation to the finish; and of helping in measuring up the extras and omissions as well as of constantly seeing the work during its progress.

The engagement lasted two years, and though most beneficial to me, it seems almost a blank in my memory, from its even and uneventful character."

Following on this interesting record of the great Gothic revival architect's connexion with such a prim Greek revival building, should be given this curious passage of the inner history of the rebuilding of the Hall, which is revealed in another autobiography, that of Sir John Rennie. It appears from his account that old Fishmongers' Hall need not have been pulled down at all. It was a question of the approaches to new London Bridge, which were to be dealt with by a Bill brought into Parliament in 1829. There was a strong opposition, which the Duke of Wellington met with a firm decision to carry through the Bill. Sir John Rennie, the engineer, was made principal witness in favour of the Bill. He says:—

"The brunt of the battle fell upon me; I was the leading witness and had to establish the whole case. I never felt more nervous in my life; I was to be prepared upon all points to defend everybody else's errors as well as my own. I knew there were several weak points, and though I had an excellent case upon the whole, I still felt the greatest difficulty about it; I knew also perfectly well, that if I broke down, my career as an engineer was ruined for ever, for the Government had pinned their faith upon me." He adds that Mr. W. Montague, the Surveyor to the City, "had, when the first Bill of 1821 was carried, made the surveys of the property to be taken for the approaches on both sides of the bridge, which was confined to 180 ft. above the old bridge—this limit ought to have been taken in a direct line, at right angles to the old bridge; but unfortunately it was taken according to the line of the shore, which near the old bridge receded considerably, whilst the old Fishmongers' Hall, projected beyond it, making the direct line, if taken as it ought to have been, at right angles to the old bridge, 20 ft. longer than if measured according to the line of the shore. This difference of 20 ft. rendered it necessary that old Fishmongers' Hall should be removed."

We are then told of the negotiation to purchase, and that "the Company did not wish to build a new hall, as the existing one answered their purpose very well," but not wishing, however, to be obstructive to the new bridge and approaches they sold, and so the new Hall came to be built. The opposition to the Bill did not discover this inconvenient error, which would have been extremely useful to their case, and one may certainly regret the apparent sacrifice of the older structure to the necessities of a Parliamentary situation and of engineering prestige.

Cockerell, being a brother-in-law of Sir John Rennie, was consulted by him as to the architecture of the approaches, but unfortunately the Committee rejected his designs; he tells us—

"The Committee considered them to be too ornamental and costly, although they were as plain and simple as these important approaches rendered necessary. The Committee having rejected them, referred the subject to the late Sir Robert Smirke, then one of the Crown architects, and he designed the present buildings on both sides of the bridge, as far as King William-street on the north, and the old Town Hall of Southwark on the south; and certainly, with all due respect to my late friend, Sir Robert Smirke, a more unworthy set of buildings was never designed. Thus not only has a rare opportunity of making handsome and appropriate buildings to one of the greatest thoroughfares of the world been lost, but the buildings themselves are so low and badly built that the advantages of the ground, which it must have been foreseen were capable of almost unlimited development as regards rental, have been in a great measure thrown away."

This severe judgment of the engineer of the bridge has a distinct interest, and is probably one in which most architects will concur. It is certainly regrettable that Cockerell's great abilities just missed being exhibited on such a splendid scale, and with such a unique opportunity. There is a modern lesson in the way in which this great engineer seems, as a matter of course, to have invited architectural advice in his schemes; nor is it the sole occasion related in his life on which he did so, and one can only suppose that more cordial relations between engineers and architects existed in those days. To this, in fact, not a few of the earlier great engineering works bear witness, having a considerable impress of the current architectural ideas of the day.

NOTES.

The Small Houses Bill.

THE Bill to enable the owners of small houses to buy the freehold of these houses by means of loans from Local Authorities was read a second time on Tuesday. We have already pointed out that this measure is a mere piece of electioneering. The Opposition, as much as the Government are in favour of its principle, for the very good reason that it is a measure which sounds so very friendly to the working man. It can do very little for him. A building society can now help him to buy his house if he wishes. But the increased ease and cheapness of communication between the great centres of population makes labour more inclined to move about than at any previous time. Moreover, after all is there any great advantage to a poor man in being the owner of a poor little house? We are inclined to think he is better off if he can move from house to house as he wishes. However, this Bill is now referred to a Grand Committee, and will, we suppose, become law this session.

The Building Trades Exhibition.

THE Building Trades Exhibition is to be opened at noon on Wednesday, at the Agricultural Hall, by the President of the Institute of Architects, supported by a number of distinguished men. It is promised that the exhibition will be the best of its class that has been held, and there seems to have been every effort to render it so. It is divided into a General Section (in the Great Hall), an Electrical Section in the Smaller Hall, and a

Smoke Abatement Section, in the King Edward's Hall. There is also, as we have already mentioned, a special exhibit of Road Surveyors' work, which we presume is included under the heading of the general exhibition. We hope the exhibition will be a great success.

The Kensington Fire.

THE fire at the Hyde Park Court Mansions seems to show that we have not as yet appreciated the risks of an outbreak in tall buildings. We firstly do not afford sufficient protection to the inmates in the form of exits; we do not think sufficiently of the rapid spread of fire up tall shafts; and, lastly, our Fire Brigade has not yet been equipped to meet such contingencies as a fire commencing some 80 ft. above pavement level. As to the question of exit, we desire to advocate the better arrangement and separation of staircases in buildings of this description; and in regard to the spread of fire we again would advocate a better isolation of the individual risks, and the protection of those terrible flues—the lifts. As for the Fire Brigade which worked so splendidly at the Hyde Park Mansions, we would only remind those in authority that even with lengthened fire escapes great difficulty will be experienced in attacking fires of this kind, and that the nimble hook ladder, which is used with such effect in the United States and on the Continent, might well be given a trial, whilst better arrangements for running hose rapidly to high levels will probably have to be provided by the owners of structures of this class.

Edinburgh County Buildings Competition.

THE conditions of this competition have been forwarded to us officially. They are fairly drawn up, but considering that the problem is a complicated one, and that competitors are required to "state in detail the materials and nature of the work proposed, the construction, ventilating, lighting, heating and equipments," the time (June 27) is rather short, and ought to be extended. The conditions state that the County Council "will reserve to themselves the ultimate decision as to the selection of an architect from among the competitors. They will, however, appoint a neutral architect of standing as assessor, and will give the fullest consideration to his advice." If this latter promise is *bonâ fide* acted upon, we do not see that more can be demanded; but it would have been better if the assessor had been selected and his name given in the Conditions, so that intending competitors may judge whether he is one in whose judgment and fairness they would feel confidence.

Sanitary State of Christchurch.

DR. ST. GEORGE MIVART'S Report to the Local Government Board on the Sanitary State of Christchurch shows that this important neighbourhood is in a most unsatisfactory condition, and apparently is saddled with a Town Council who are experts in the art of doing nothing. The general result of the Report is that a large number of the smaller houses are in a most unsatisfactory condition, with dilapidated walls floors and ceilings, ill-ventilated, and without proper means for draining off rainwater. More than half the water supply is from wells, public and private; of the latter the Inspector saw few that ought not to be closed. At the National Schools (380 children) there is no water supply but from pumps and wells belonging to adjacent cottages. One of these wells is described as 8 ft. deep, dry-steined and the sides covered with vegetable growth; at the bottom of it "broken pots, tins, and other domestic refuse in variety could be discerned. A number of frogs and toads, some alive and some dead, could also be seen in the water." There is no regular system of sewerage, though there are in the district about 4,100 yards of pipe sewer, of various lengths. From all these the sewage is discharged, untreated, into the Stour and Avon. The Report says—"It is a sufficient commentary upon the attitude of the Town Council with regard to the drainage of the district to record the admitted fact that they have never consulted an expert engineer with a view to the devising of some suitable scheme, but continue to plead that their district is a low-lying one, and therefore difficult to deal with, as an excuse for the continuance of the present system, if system it may be called."

The Welsbach-Daylight Case.

ON the 15th inst. Mr. Justice Byrne delivered judgment in the case of the Welsbach Incandescent Gas Light Company, Limited, *v.* the Daylight Incandescent Mantle Company, Limited. The action was brought by the plaintiffs to restrain the Daylight Company from infringing the Welsbach patent of 1885, and the main contest turned upon the true meaning of the sentence in the specification, "and instead of oxide of lanthanum cerite earth containing no didymium and but little cerium may be employed." At the date of the patent the true value of a very small proportion of cerium in increasing the light-emitting power of a mantle was not understood, although it was known that a fairly large proportion of cerium was injurious. Mr. Justice Byrne is, however, of opinion that the sentence in the specification is not a warning against the use of cerium altogether, but merely a warning against much cerium, and shows at least that the inventor knew that a little cerium would do no harm. It is also held that the slight deviation in the method of making Daylight mantles from that of making Welsbach mantles is of too immaterial a character to entitle the defendants to say that they have not substantially adopted the Welsbach process. The Welsbach Company may be congratulated upon their success, for while most persons will agree with the latter part of the finding, many will continue to regard Welsbach's reference to a "little cerium" as a happy "fluke." It is worthy of note that the important patent in question dates back to the year 1885; we may, therefore, expect to see the market flooded next year with cheap mantles made under the protection of this expired patent. The Welsbach mantle of to-day is an improvement upon this early mantle, but its sale will not, we believe, remain unaffected by the inevitable competition of cheaper mantles.

Glass Stone.

SOME interesting information concerning the substance known as glass stone (Garchey's process) has recently been published by J. Henrivaux. This new building material is now being manufactured on a large scale, and the results of some official tests show that it will resist a pressure of 2,023 kilos per square centimètre, whereas granite is crushed under a pressure of 650 kilos. It is also found to be unaffected by frost, and to resist attrition better than Comblanchien building stone or St. Raphael porphyry. Some of the advantages claimed for glass stone as a building material are its cheapness, hardness, resistance to atmospheric influences, and its non-porosity. It is also claimed that it is suitable for street-paving, as it is easy to clean, capable of withstanding the vibration of traffic, and does not (it is said) become slippery. Having regard to the fatal effects of the inhalation of even a very small quantity of glass powder, we should recommend very careful examination of the material under the influence of incessant friction before permitting it to be employed as a paving material.

The Electric Arc.

AT the Institution of Electrical Engineers last week a very interesting discussion took place on Mrs. Ayrton's paper. Professor Fleming said that although the electric arc had now been known for the greater part of a hundred years, yet our knowledge of it had advanced very little. The phenomena presented were those of the flow of current through a column of vapour, and in his opinion they were very similar to what happened in the electrolysis of liquids. It seemed to him that the carbon molecule was split up into two ions, the negative ion having a much greater velocity than the positive ion. There was, therefore, an accumulation of negative carbon ions forming a cushion on the positive pole, the crater of which was formed by the bombardment of the ions. Starting with this hypothesis, it was easy to show that many of the curious experimental results observed by Mrs. Ayrton followed easily by considering the chemical actions that took place in hissing arcs. Captain Abney stated that many years ago, when pursuing spectroscopic research with the aid of an arc lamp, he had observed most of the phenomena which are now exciting such interest. In particular, he had observed that just before hissing commenced the arc began to rotate very rapidly. He made the suggestion that if the various kinds of electric arc were examined and mapped spectroscopically, a great deal could be learned that could be found out by no other means. It was interesting to learn from Captain Abney that he had anticipated Mr. Trotter's discovery of the rotation of the electric arc by many years, and the modesty with which he made the claim now was only equalled by the magnanimity with which he allowed Mr. Trotter to claim all the credit at the Royal Society meeting some eight years ago.

A Memorial to Sir Thomas Browne.

IT is proposed to erect, at an estimated cost of about 1,000*l.*, a statue to the author of "Religio Medici" and "Hydriataphia" (or "Urn Burial") in Norwich, where he practised as a physician during forty-six years, having removed thither from Shipden Hall, near Halifax, in 1636. A suggested site for the statue is the Haymarket, being near the site of his house, now used as banking premises, and distinguished by a memorial tablet. Sir Thomas Browne was buried in the church of St. Peter Mancroft, where his remains were discovered some years ago on the digging of a grave in the chancel.

Designs for Wall Hangings.

NOWADAYS it is a common practice for architects to pay as much attention to the interior decoration of their houses as to the exterior, even designing wall papers, hangings, and furniture. The result in some cases has been very successful, giving a harmonious whole instead of the usual collection of tradesmen's ideas deposited in an incongrous way in an otherwise artistic house. Messrs. Hayward & Son are holding an exhibition of wall papers and other mural hangings at their show rooms in Regent-street, all of which are designed by architects or men well known for their decorative work. A special feature of the exhibition is the jute hangings, dyed and stencilled, or stencilled on the natural coloured jute. The first exhibit we saw was a holly hock design by Mr. Belcher—a frieze based on vertical lines, the stalks at intervals running under the picture-rail to the skirting below, forming plain spans between for hanging pictures or for door openings. Mr. Ernest George has designed a bold all-over pattern for a billiard-room, the stencil in red on the natural coloured jute background. This design is, however, somewhat too hard and geometrical in line even for a billiard-room. Mr. Beresford Pite and Mr. Gwatkin have done some striking designs for this method of decoration. The method produces the effect of tapestry and looks extremely well in all varities of rich, gorgeous, or sombre colouring. There are also many new friezes and papers, both block printed and done by hand. Mr. Clement Heaton's embossed papers (more sanitary than the jute coverings, as they are washable and will not hold the dust) have somewhat the appearance of Japanese work, without the limitations of Japanese colouring. The outline only is embossed, and thus is capable of a rich and varied effect, without the cheap effect that most embossed papers have.

The Architectural Association.

WE are glad to see that the Architectural Association has invited Mr. Fellowes Prynne to take a second year of office as their President. Mr. Prynne has made an admirable President, at once friendly and pleasant in his manner and at the same time well able to keep order in a meeting and do all that a President can do towards making it a success. The list of the other officers of the Association for the new session is given in another column.

SALFORD CEMETERY COMPETITION.

THERE is one satisfactory feature about this competition, and that is that the instructions explicitly state that, "provided the sanction of the Home Secretary is obtained to this [*i.e.*, the Agecroft] site being acquired for cemetery purposes, it is intended to appoint the architect of the premiated design to carry out the work;" and a second satisfactory feature is that the premium does not merge in the usual 5 per cent. commission. Little else about it can be considered satisfactory, either by the promoters or the competitors. There must be something radically wrong in the promotion of a competition for buildings of this character, if, notwithstanding the artistic temptations, only twenty-nine designers are found willing to compete, and many of these merely pupils or young assistants. Architects do not now rush into competitions with such light hearts as of yore, and promoters will eventually learn that architects of standing will not compete, no matter how tempting the nature of the proposed building may be, unless the instructions are satisfactory and a suitable professional assessor appointed.

In this case the original and the revised instructions contained no mention of an assessor. The question was asked, and on May 26, 1898, the competitors were informed that "the committee have not yet decided to appoint an assessor;" additional replies were sent out on July 1, 1898, and apparently the matter had not then been deemed worthy of the committee's consideration, as no further information was given. This one defect alone is sufficient to account for the generally mediocre character of the designs submitted; capable and busy architects are not likely to compete when there is no assurance that their designs will be judged by an architect in whom they have confidence. If it is a question of a warehouse or factory, where utility is of prime importance, "practical men" may perhaps be capable of deciding; but in a competition of this sort, where artistic quality is the chief desideratum, only a man well-versed in architecture can adjudicate satisfactorily. We were informed at the Town Hall, where the designs are exhibited, that, notwithstanding the "not yet" in the reply of July 1, no assessor was ever appointed.

But the lack of an assessor is not the only defect. No limit of cost was given in the instructions, nor were the competitors required to state the cubical contents of their proposed buildings, so that their estimates could be conveniently checked. The result is that some of the designs are grievously underestimated, and one of the best designs is overestimated to such an extent as to put it out of court. When estimates varying from about 7,000*l.* to 23,400*l.* are submitted for buildings containing the same accommodation, the veriest tyro must know that something is wrong somewhere, especially when he finds that some of the lowest estimates are for buildings of the most costly character. Then, again, there was no necessity for all the "ground plans" to be drawn to the scale of 4 ft. to an inch; perspectives might be submitted or not at the option of the competitors; the geometrical drawings might be finished in black and white, monotint, or colours, and mounted on stretchers or cardboard, or framed or left unmounted, just as the competitor might choose. The result is of course confusing, and the pretty drawing is preferred to the good design.

Design No. 1, by Mr. Henry Lord, of Manchester, has gained the second premium, thanks to the three large and effective perspectives in which the proposed buildings are shown. The perspectives are in sepia, framed and glazed, and are the most showy drawings in the room. In the Church of England chapel, the mortuary, which has evidently proved the crux of the problem to the competitors, is placed at the extreme east of the building; in the Nonconformist chapel it is on the north side; and in the Roman Catholic chapel it is between the altar and the body of the chapel. The buildings are on the whole well planned, with the exception of the urinals; these, although shown on the plans, are discreetly omitted from the elevations, and no wonder, for that belonging to the Church of England chapel is a central feature of the east end, and would, if shown on the elevation, have furnished a curious contrast to the large traceried east window above it. The chapels are Early Perpendicular in style, with stone walls and high-pitched red-tiled roofs, and each chapel has a tower and spire, that for the Roman Catholic chapel being of stone. The required accommodation is given, but one water-closet for men and two for women are not sufficient for a cemetery where, according to the official "replies," the Burial Service may be "read over several coffins" (sometimes fifteen or twenty) "simultaneously." No lavatories or other conveniences are provided for the priests, clergy, or ministers. It is a fairly good design, but expensive and without distinction.

Design No. 2, by Mr. F. W. Dixon, of Manchester, suffers from the lack of perspectives. The style is Perpendicular, somewhat freely treated, the walls being of brick with stone dressings. The chapels are well planned; in those for Churchmen and Nonconformists the mortuaries are on the north side, while in the Roman Catholic chapel it is placed behind the altar. Each vestry has a lavatory adjoining it. The west windows are well designed, but the enclosing arches are too shallow to be effective. Each chapel has a tower with low roof. The lodge and offices are well arranged, and the conveniences sufficient. This design is considerably above the average in merit. The estimated cost is 7,860*l.*

Mr. H. D. Pritchett (Darlington) is the author of the third set of drawings, which are in black and white. They are carefully done, but the effect is marred by the great black masses which fill the arches of the porches. Even if the windows must be blacked, there was no necessity to treat the arches in the same way, as there is an unobstructed view through them, the porches in which they occur being arranged so that carriages can drive through. Mr. Pritchett is the only competitor who has adopted this feature, the *porte cochère*, but the effect is rather weak, as in each case it is surmounted by a stone tower and spire. The style adopted is Late Decorated, and the estimated cost, notwithstanding the stone spires, is only 7,450*l.*

Design No. 4, by Mr. R. T. Beckett (Liverpool), is shown in nine drawings. The elevations are simple; no towers are included, but the Church of England chapel has an octagonal turret. The wood ventilators on the other chapels would have been better omitted, and the scratchy line perspective has doubtless done the competitor more harm than good. Although simple, this design is estimated to cost 8,850*l.*

Of Design No. 5 the less said the better. It has flint-faced walls, vermilion roofs, spiky gables, fly-wheel tracery, and elongated pinnacles.

Design No. 6, by Mr. R. J. Beale (Westminster), shows some variety; the Roman Catholic chapel is in the Norman style, the Nonconformist chapel is in the transitional stage from Early English to Decorated, and the Church of England chapel Perpendicular; but, taken as a whole, the designs do not rise above mediocrity.

Mr. J. G. Stephenson (London) has submitted a design (No. 7) much more worthy of note, although the planning of the mortuaries leaves something to be desired, and the chapels are disfigured by the heavy coping to the gables. The lodge, offices, and gateways are the best part of the design. The two buildings are placed on the right and left of the gateways, and are designed to correspond, each having a semi-octagonal bay rising into a squat circular tower with pilasters above the angles below, and finished with a low dome with lofty finial. Estimated cost 8,875*l.*

Design No. 8 is by Mr. J. P. Wilkinson (Manchester). The lodge and offices are "Gothic" of wretched type, but the chapels are better, although an elevation with 6 ft. 6 in. of vertical height for the wall and 29 ft. for the roof cannot be considered either well-proportioned or beautiful. Estimated cost, 11,655*l.*

No. 9, by Mr. G. B. Lewis (Hackney), is not without good points. The mortuaries are all planned at the east end, giving length to the chapels, which adds considerably to the external appearance. The tracery is good, if not particularly distinguished. Stone walls are shown, and green-slated roofs. The lodge and offices are somewhat wastefully arranged, but the drains are well planned, which is more than can be said of those shown by some of the other competitors. Notwithstanding the simplicity of the plans and elevations of the chapels, this design is estimated to cost 10,008*l.*

No. 10 exhibits a very poor type of Gothic with the baldest of bald plate tracery, and a Classic gateway-pile, the heaviness of which Vanbrugh himself might have envied. Mr. E. C. Ball's design (No. 11) is better. The chapels are all of Early English character, but of a heavy type; the sepia perspective of the Church of England chapel is well drawn. In the next design the offices are adorned with a clock-tower, the lodge is extravagantly planned, and the gateways are deplorable.

Thirteen is by many sane persons considered to be an unlucky number, and we fear that Mr. J. B. Poyser, of Nottingham, to whose design this number has been allotted, will sympathise with these persons to the end of his days, for his design is one of the best in the room, and ought certainly to have been premiated. Unfortunately, he estimated it to cost no less than 23,400*l.*, which is nearly double the estimated cost of any other design submitted. We had no opportunity of cubing this and the premiated designs, but as Mr. Poyser's chapels are simply planned, and without either towers or turrets, while the first premiated design has one huge tower and the second and third premiated designs have each three towers, we cannot but think that it would be

less costly than any of them. Mr. Poyser's drawings are all to the 4-ft. scale, and are nine in number, but it was an additional disadvantage to him that no perspective was included. The style adopted is a late type of Gothic with low-pitched roofs, and the detail is excellent. The drawings are in brown lines with sepia washes on the roofs and windows, and are very carefully and cleverly done. The Church of England chapel and the gateways are, perhaps, the most pleasing parts of the design, but all is excellent, and, to use a current expression, it is hard lines for Mr. Poyser that his design has not been adopted.

Design No. 14 is more curious than beautiful, with its semi-circular gables, lofty clearstories, and attenuated buttresses. Messrs. Martin & Davis (Darlington) are the authors of the next set of drawings (No. 15), which include a frame of six sketchy perspectives, apparently in ordinary writing ink. An attempt has been made to give the Nonconformist chapel a quasi-Classic appearance, but it is not very successful, and the four slender slated pinnacles, one at each angle of the Roman Catholic chapel, are far from pleasing. Estimated cost, 11,950*l.*

Design No. 16, by Mr. Alfred H. Mills (Manchester), has been awarded the third premium. The plans of the Church of England and Nonconformist chapels are, allowing for the difference in size, practically identical, the only important variation being that the former has a semi-octagonal apse, and the latter a semi-circular one. Each has the mortuary on the south side, the vestry at the north-east corner, and a porch and tower at the north-west corner. The Roman Catholic chapel has the mortuary between the altar-space and the area of the chapel, but this also has the tower at the north-west corner. The geometrical drawings are artistically coloured, the elevations being set off by trees and skies, and the sections of the Roman Catholic and Church of England chapels are relieved with wall-paintings cleverly indicated. The style adopted is early Perpendicular, the towers having lofty slated spires. The west window of the Church of England has seven lights, with the outer light on each side separated from the others by a buttressed mullion, and all the lights enclosed in a deeply-recessed arch. Four small perspectives are sent, mounted on one stretcher. This is certainly a good set of drawings.

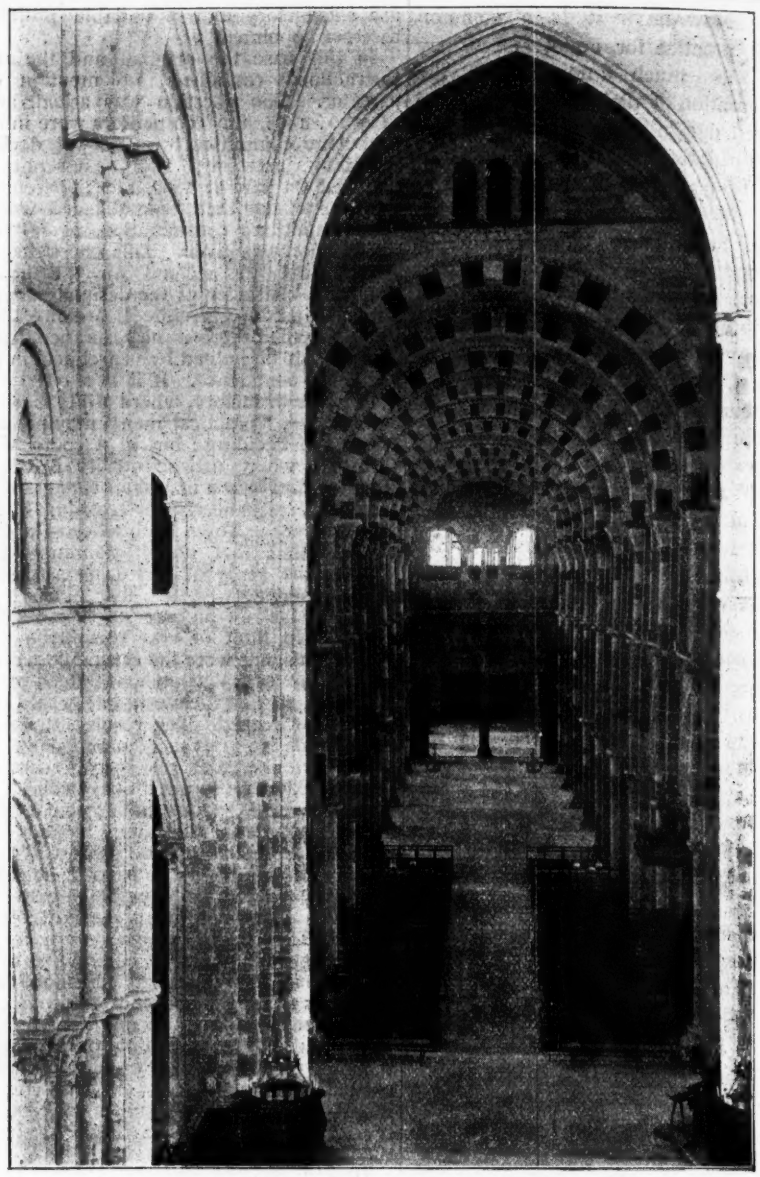
The next design is very poor, and we will pass on to No. 18 by Messrs. Hall, Cooper, & Davis, of Scarborough, which is a good design, but the drawings bear evidence of having been prepared in a great hurry. The buildings are well planned, and the design, though neither elaborate nor eccentric, bears marks of distinction, which is more than can be said for all the premiated designs. Here again the estimate is high, namely, 13,053*l.*; indeed, with the exception of Mr. Poyser's, it is the highest of all the unpremiated designs.

The first premium has been awarded to Messrs. W. R. Sharp and F. Foster, who, by a strange coincidence, hail from the same city as the other two successful competitors—to wit, Manchester. Messrs. Sharp and Foster's design is a costly one, cleverly shown in a series of sepia drawings, brightened by warmer washes on the roofs. Nearly one-half of the Church of England chapel, exclusive of the mortuary, is carried up as a tower which has a seven-light traceried window on each of the four faces above the roof. As the body of the chapel has two heights of windows, the result is not very satisfactory, the building being too short for its height. The Roman Catholic chapel is simpler, and will be more pleasing in effect; it has an octagonal apse, but no tower, and the Nonconformist chapel is simpler still. Such a marked distinction between the three chapels is scarcely what one expects in a public cemetery, although, of course, some distinction is desirable. The entrance gateways are well designed with a niche over the large archway, and the adjacent buildings are good in themselves, but have too much the appearance of farm-buildings to be quite appropriate. The urinals adjoining the chapels are better placed in this design than in any other. The difficulty has been felt by most of the competitors, and some have assumed that they were to be adjuncts to the vestries. Messrs. Sharp & Foster place them underground, with the entrances at the foot of the steps leading to the heating-apparatus cellars. This is a good design and worthy of a premium.

Mr. Boyd's design is simple, and the elevations are not without merit, but there is too much waste space in the plans. No. 21 shows towers of mediocre design to the lodge and offices, and the tracery of the Nonconformist chapel is of a debased character. No. 22 is curious and wonderfully coloured, with entrance buildings of most depressing design. No. 23 shows transepts to two of the chapels, and this involves a large amount of waste space. No. 24 is very poor work. No. 25, by Mr. W. H. Linton, of Stockton-on-Tees, has the merit of simplicity, the offices and lodge being the best part. Messrs. Watson and Curry's design is above the average, but does not call for particular comment. The same may be said of Mr. L. H. Dutch's design. Mr. C. Spooner, of London, sends design No. 28, in which two of the chapels have two mortuaries each. The style throughout is simple Early English, and the elevations have merit, but of too quiet a character, we fear, to gain the approval of a committee. The last design, by Mr. H. C. Fread, of London, is worthy of mention for the way in which the mortuaries are planned; these are, in two cases, octagonal buildings, after the manner of chapter-houses, and connected with the chapels by lobbies. The idea is good, but is not well worked out.

With the exception of the three premiated designs, every set of drawings has the author's report appended, containing his estimate of the cost. Why the reports of the successful competitors should be withheld we do not know, but we made it our business to ask for them, and after considerable difficulty we succeeded in obtaining them for a brief inspection. Messrs. Sharp & Foster, winners of the first premium, estimate the cost of their proposed buildings at 8,830*l.*; Mr. Henry Lord, winner of the second premium, estimates the cost of his buildings at 11,200*l.*; while Mr. A. H. Mills estimates that the third premiated design will cost only 8,487*l.* to execute. It is very evident that the competitors' estimates, taken as a whole, give only the vaguest idea of the probable cost of the buildings, and no attempt appears to have been made by the adjudicators to check these estimates and arrive at a satisfactory conclusion. While Mr. Poyser's estimate of 23,400*l.* is too high, there can be no doubt that some of the other estimates are too low. Even in such a simple matter as the boundary walls, there is a vast difference; those in the first premiated design are estimated to cost 2,500*l.*, while the author of the third premiated design estimates his to cost only 1,275*l.*

So ends this competition, which has been "dragging its slow length along" for no less than eleven months. The designs are exhibited in the Health Department of the Town Hall at Salford, and will remain on view until the end of next week.

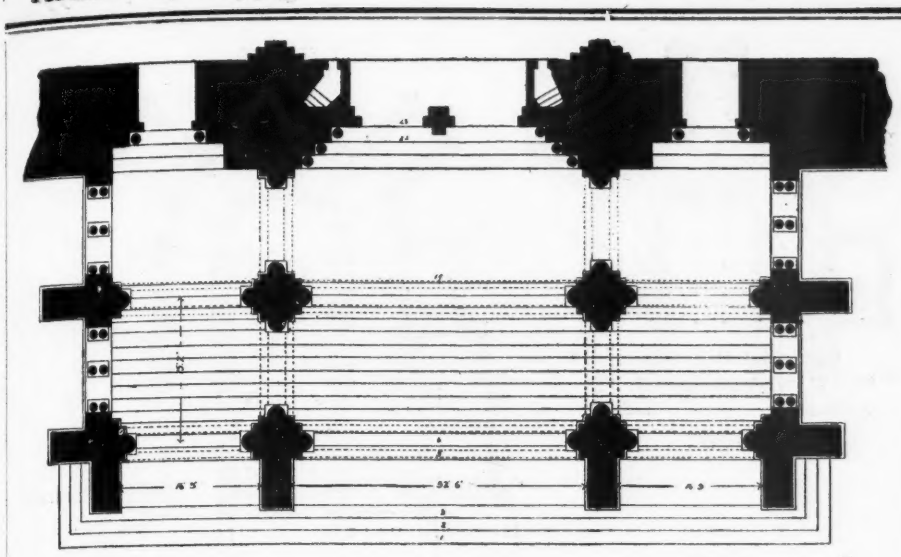


Vézelay: The Nave, Looking West.

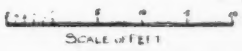
BURGUNDIAN CHURCHES.*

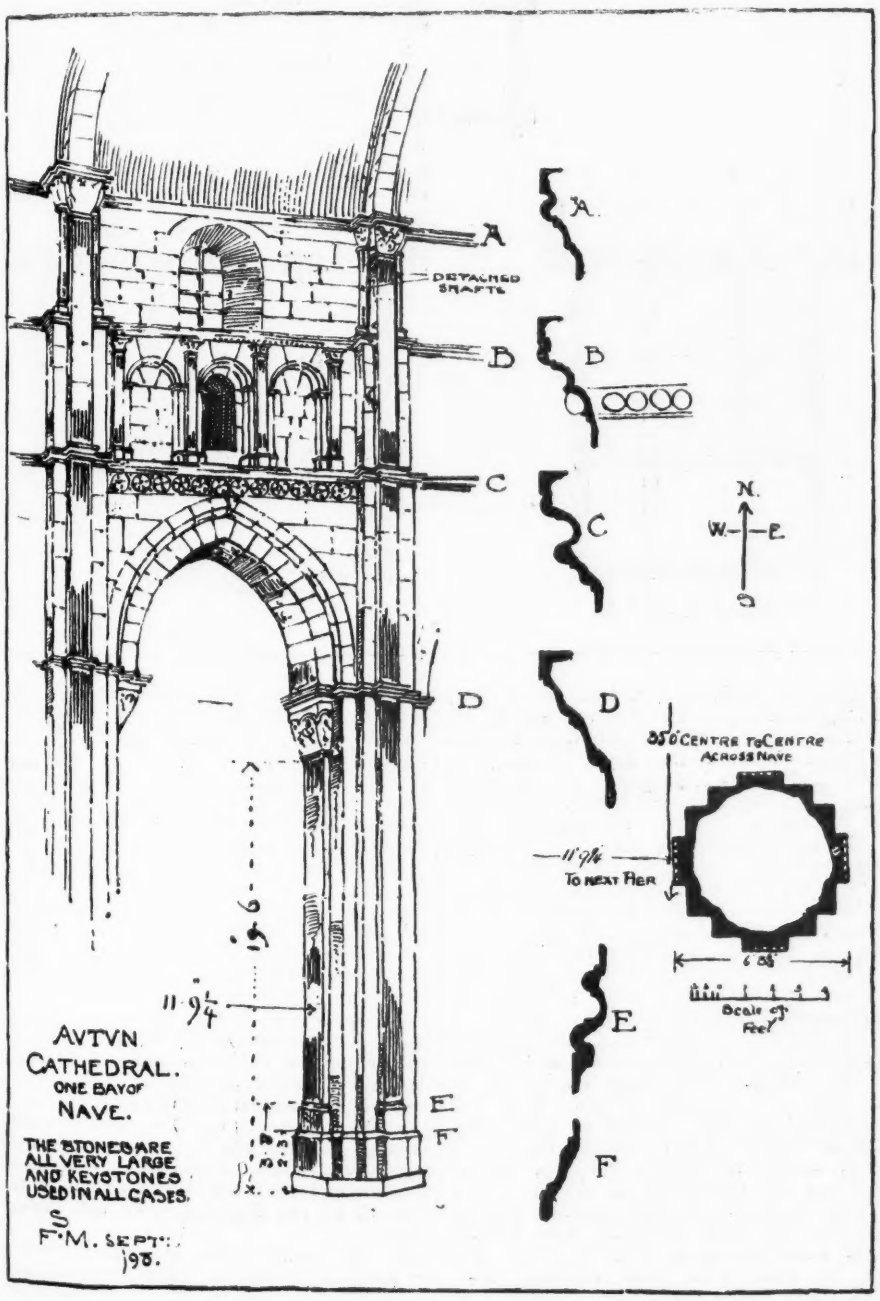
AN art, in its infancy, often possesses a stronger attraction than it does at its maturity. There is a life, a vigour, an originality about the commencement of any style or movement which is often lacking when such style or movement approaches nearer to what we are pleased to call perfection. Then, although it may better satisfy our critical faculties, it does not appeal so strongly to our sensuous. It is beautiful, it is correct, but it is often cold. To feel the thrill of excitement, to experience the delicious sensation of being confronted by something which we feel instinctively is the result of individual effort, is more likely to happen when in the presence of work designed by the pioneers of a movement than when examining that evolved by the perfecters of a movement. For this reason archaic Greek sculpture often exercises a fascination and affords a sensation which one cannot feel before even an Adonis or a Venus de Milo.

* A paper by Professor F. M. Simpson, read before the Liverpool Architectural Society on February 20 last.



AVTVN CATHEDRAL.
WESTERN PORCH.





For this an early capital, with embryo acanthus leaves, appeals to one more strongly than the perfected Corinthian of the Pantheon or of the Temple of Mars Ultor. And for this reason it was that, having a fortnight to spare last autumn, I paid a flying visit to one of the most fascinating parts of France, the old Duchy of Burgundy. For here one may see the first attempts of the Gothic builders. Monastic Burgundy is the cradle of the great Western style, which was afterwards polished and perfected by the artist laymen of Central France. It is true that much of the work here is largely influenced by a previous style, and is strongly impregnated with the old Classic feeling. But, putting detail on one side for the present, the great ruling principles which are to be found in the buildings here are those which were afterwards followed by the great Mediæval craftsmen, and which governed their designs.

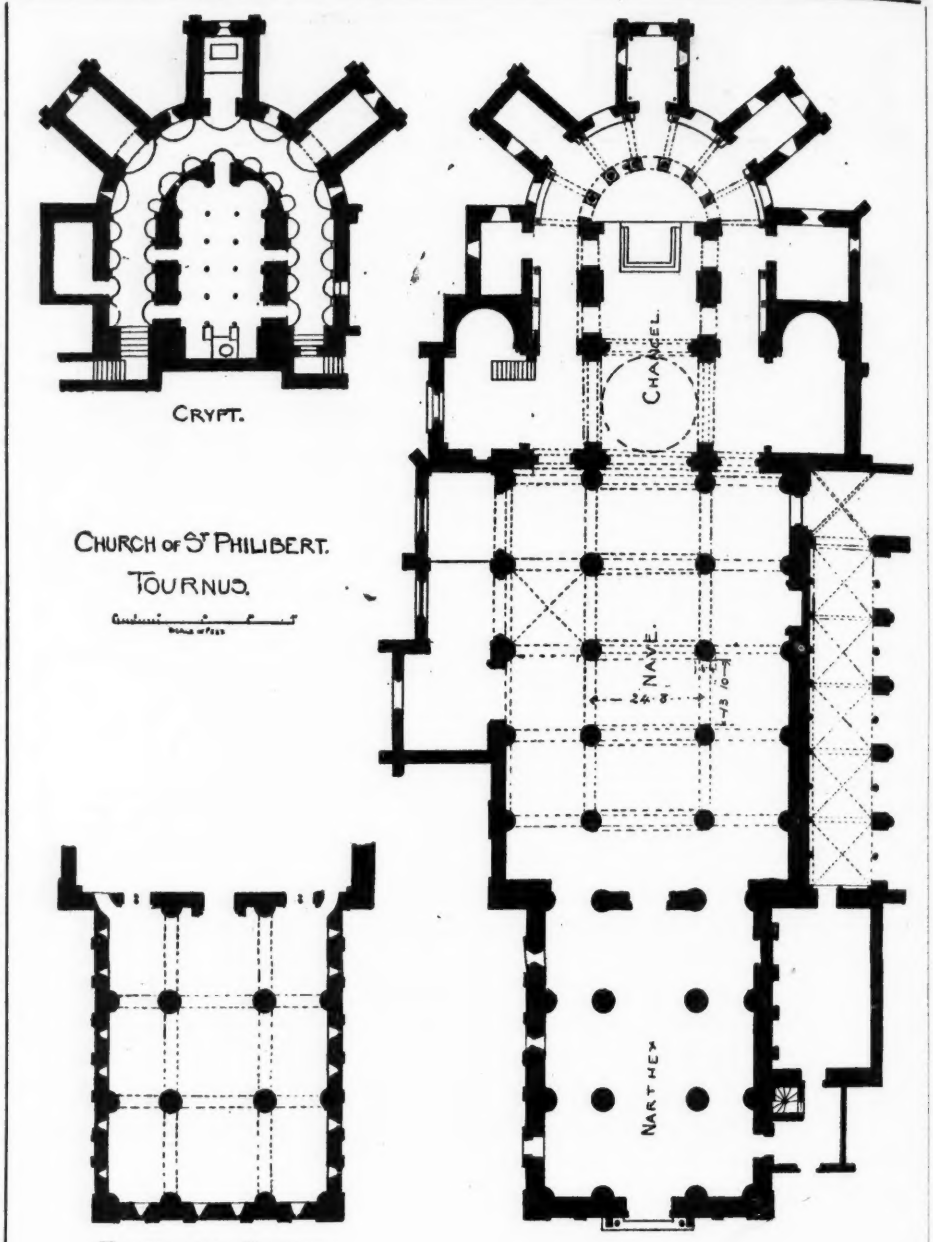
Of the work commonly called Gothic there is much that is beautiful in the province, but of this I do not propose to treat. I wish to confine my remarks entirely to the earlier work o the eleventh and twelfth centuries, when the whole of Burgundy was, artistically, under monastic rule, and acknowledged as its suzerain the Abbey of Cluny.

Of this mighty abbey, which at one time boasted one of the largest churches in Christendom, few remains exist. The Order, started at the commencement of the tenth century, rapidly developed and reached its zenith about the middle of the eleventh. Its rule extended not only over the Duchy, but far beyond it. It was at Vézelay, the greatest of its offshoots, that crusades were preached in 1098 and again in 1146, and it was from there, in 1187, that the French king, Philippe Auguste, and Richard I., of England, started for the Holy Land. In all the crusades went many monks as missionaries, and other learned men. Some of them doubtless returned filled with delight for the masterpieces of art they had seen in far-off lands. For it was in the East that the old Greek traditions still lingered, and the descendants of the old Greek artists still worked. This was to have an important influence on the work of the Burgundians, as we shall soon see. But there was another influence, equally powerful, which affected their work quite as much. This other was the old buildings dating from Roman times, many of which existed in their midst. At Autun, for instance, even at the present day, there are two Roman gateways, still in good preservation, besides other remains. It is no wonder, therefore, that we find in this twelfth-century work fluted pilasters instead of engaged columns, Corinthian capitals which might belong to the second century A.D., and classic ornament, the egg and dart, the fret, the leaf and dart, and the guilloche differing but slightly from that executed by Roman workmen in the later days of the empire.

The Classic influence is also shown in their use of large stones, formerly symbolical of Roman greatness, in their barrel-vaults, in their groined intersecting vaults almost invariably built without diagonal ribs, and by the way in which they clung to the semicircular arch, for æsthetic considerations, long after they had introduced the pointed form and had realised its great statical advantages wherever strength and diminution of lateral thrust were essential. This important constructive alteration the Burgundians were amongst the first to adopt. If not quite so early in the field in this respect as their brethren of Provence and Aquitaine, they were undoubtedly the first to universally apply it. One peculiarity may be noticed in the form they adopted—their pointed arches are almost always stilted. Whether this was owing to the fact that it had become a rule with them always to stilt their semicircular arches—all those at Vézelay are so treated—whether they desired, although using the form, to make it as little apparent as possible, or whether they had not yet learnt its full value and were a little afraid of it, it is, of course, now impossible to say. It is also possible that the Saracenic influence, once powerful there, still affected them. An early instance of the pointed arch is to be found in the Church of St. Martin d'Ainay at Lyons, which Fergusson places as early as the tenth century. In the great nave of Cluny, finished about 1130, it is said that the pointed arch was used throughout for all the arches. This is all the more easy to believe because this form is found in the nave of the cathedral at Autun, built at that time. In the nave of Vézelay, built 1104-1120, the stilted semicircular arch is used throughout; but in the narthex, built 1128-1132, all the arches are pointed except the one supporting the eastern gallery. From this, therefore, we gather that the pointed form was in universal use after the first quarter of the twelfth century. The church at Autun is one of the most interesting in the province, not only because it is said to have been a copy, in its main lines, of the Abbey Church at Cluny, and from it consequently we can somewhat realise what the parent church was like, but because one finds here the fluted pilasters, the Corinthian capitals, and the round-arched arcading, legacies from the old Classic days, combined with the pointed arch, the germ of the new development. There are other churches like it: the interior of the cathedral at Beaune is designed on similar lines, and with like detail. It has the same detached shafts immediately under the vault, the same, or nearly the same, arrangement of triforium and

clearstory; and the roof, like Autun, is a pointed barrel vault with transverse stone arches to mark the bays. It has also the same fluted pilasters forming groining shafts, the only difference being that supporting the arches of the arcade there are three-quarter columns instead of pilasters, as at Autun. The church at Paray-le-Monial is also similar in design. It is curious how extremes meet, how Transitional work at the commencement of a style resembles Transitional work at the end. At Autun it is the *new* Gothic style grafted on to *old* Classic detail; in many of the early Renaissance churches in France—St. Eustache, Paris, for example—it is the *old* Gothic style clothed in a *new* Classic dress. The result is that the two are wonderfully alike in appearance, notwithstanding the fact that 400 years separates them. But Autun is not only interesting for the reasons I have mentioned. Its great charm is its noble two-bayed open western porch. The porches or narthices form the most distinctive and most majestic feature of Burgundian work. They are of two kinds: open, as at Autun, Beaune, Paray-le-Monial, Semur, Notre Dame de Dijon, &c.; enclosed, forming ante-churches, as at Tournus and Vézelay, and, as was originally, at Cluny. Much has been written about their origin and the uses to which they were put. The reasons for a narthex at the entrance to the Early Byzantine Greek churches of the East are well known. They were used for those people who could not, by the laws of the Church, be admitted within the church itself, for the catechumens or neophytes, the penitents, and sometimes for the women But such can hardly have been the uses for the enclosed porches of the twelfth century in Western Europe. The laws of the Western Church were not so strict against evil-doers regarding their mere entry inside the church as was the case in earlier days. The practically universal adoption of infant baptism and the consequent decrease or absolute disuse of adult baptism had done away with, to a great extent, the probationer class. The laws for admission into the church had been modified. The narthex consequently must have served other needs. The length of this paper does not permit of our inquiring too closely into these, but one may accept one of Viollet-le-Duc's suggestions, that they were largely used to shelter the pilgrims who, on days of high festival, came from afar. I should like also to point out that the enclosed narthex is more commonly found in churches belonging to a monastic order, probably because the monks guarded jealously the right of entry into their churches, and that the open porch was more frequently attached to the cathedral churches which the people had a prescriptive right to enter. Whatever may have been the reasons for them, such reasons ceased to exist with the commencement of the thirteenth century, and few examples of either the enclosed narthex or the large open porch are to be found after that date. The only examples in England one can recall anything like the enclosed narthex are the Galilee porches at Durham and Ely; and the noblest example we possess of the open porch is to be found at the west end of Peterborough.

Still keeping Autun as the pivot round which turns this brief description of the distinctive marks of Burgundian work, one pauses in admiration before the wonderful sculpture which decorates the tympanum over the western doorway inside the porch of this cathedral (see lithograph). Who executed not only this work but similar work at Vézelay and elsewhere? It is totally unlike any other sculpture of the twelfth century with which I am acquainted. Viollet-le-Duc says that in France in the eleventh and twelfth centuries there were five schools of sculpture, the Rhenish, the school of Toulouse, of Limoges, of Provence, and, the last and greatest of all, the Clunisian. When I saw the examples I have mentioned at Autun and Vézelay, I felt that they must have been executed by Greek artists, and that it was impossible anybody else could have combined such strength with such delicacy as is to be found there. Viollet-le-Duc, in his Dictionary, rather shook my belief, but has not entirely shattered it. He says that although many have held the same opinion, still he is convinced that this sculpture was the work of Frenchmen working under Byzantine Greek influence and imbued with its spirit. I mentioned before that the Abbey of Cluny had close relations with the East, and not only sent missions to Antioch and other parts of Syria, but also imported works of art from there; silk



hangings, carved ivories, and paintings. It is, therefore, quite possible that the monks, on their return, brought back with them Eastern workmen. Viollet-le-Duc argues against this, saying that in no inscriptions can traces be found betraying the hand of a foreigner. His contention is that the especial feeling in these works of sculpture is taken from the Greek paintings, which he claims they greatly resemble, especially in the treatment of drapery. Be this as it may, it is not, perhaps, of great importance to us as architects. It is enough for us that they are beautiful works of art in themselves, and that they are perhaps the finest examples of twelfth-century sculpture in the world. I hope to be able to prove that this Clunisian school of sculpture spread as far as Chartres and Le Mans. One word ought to be said about the carved capitals. They are equally fine and their variety is marvellous. Some are copies of the ordinary Corinthian capital, many are figure subjects, and a few show an originality in design and a skill in execution which inclines me to the belief, a great authority like Viollet-le-Duc notwithstanding, that they are the work of men with finer instincts than the Western world could then produce. It must be remembered that Viollet-le-Duc, like all Frenchmen, was nothing if not patriotic, and it may be that the wish to show these fine works as specimens of his countrymen's skill was father to the thought. Only one point I will urge as suggested proof that the credit should not be given as he maintains. In the same church one finds capitals so different in feeling that it forces one to think two separate bands of workmen were employed. At St. Eusèbe Church, Auxerre, capitals with sharp acanthus leaves and drilled holes—one of the distinguishing marks of Byzantine work—alternate with others of much more usual design and more ordinary execution; and inside the church of Saulieu, consecrated 1119, there are many capitals bearing no resemblance to those of the Corinthian order and quite unlike anything I have seen elsewhere. To sum up the peculiarities of this Burgundian work:

1. The narthex or porch, either open or enclosed.

2. The strong Classic feeling in detail and mode of construction.

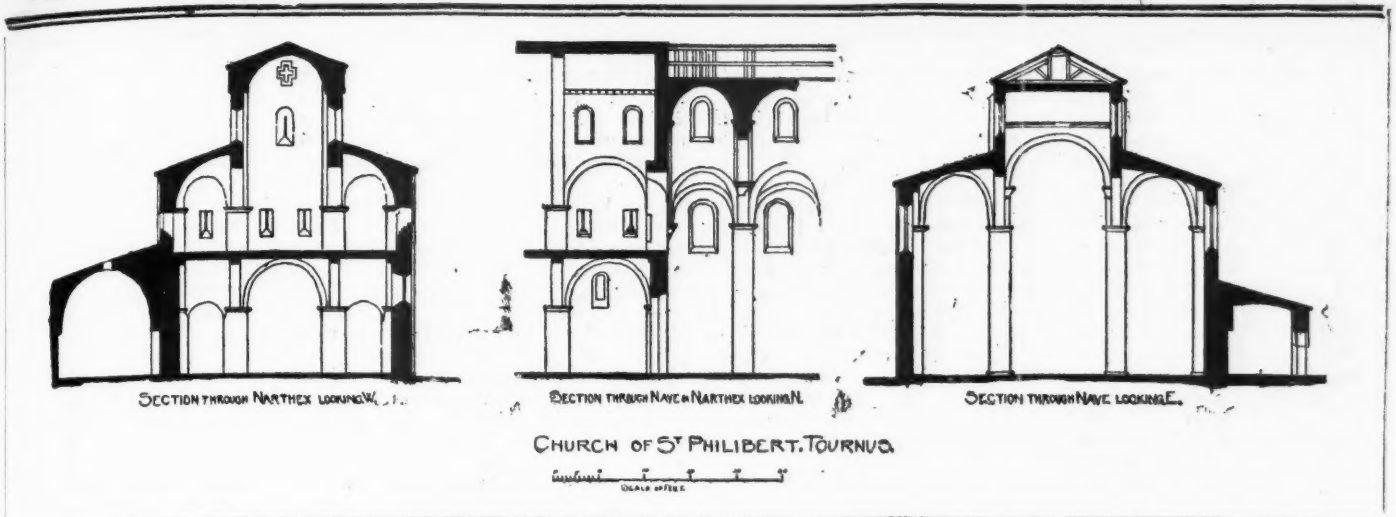
3. Early use of the pointed arch, almost always stilted; at Saulieu, the arches are unmistakably four centred.

4. Roofs—solid barrel vaults or groined (the groining always being domical in section) and the general absence of diagonal ribs even though the arches be pointed.

5. The sculpture and the carving.

6. The ornamental cut-stone work externally forming patterns, which is found only in the south of Burgundy, at Tournus and Lyons, for instance, and which is really more characteristic of work in the department of the Puy-de-Dôme.

One word about the country. It would be difficult to find a more charming and varied landscape than that which lies between Avallon, Semur, and Vézelay in the north, and Autun in the south, and of which the town of Saulieu is the centre and former capital. This portion is called Le Morvan, and abounds with tall hills, almost mountains, and deep, wide, pleasant valleys. Most of the towns are magnificently situated on the tops of hills. Avallon is over 1,000 ft. above the sea level; Saulieu, now not more than a village, nearly 2,000 ft. Autun is more in the plains, but from its size and great antiquity is especially interesting. One last clenching word: The sides of all the hills are


SECTION THROUGH NARTHEX LOOKING W.
SECTION THROUGH NAVE & NARTHEX LOOKING N.
SECTION THROUGH NAVE LOOKING E.
CHURCH OF ST PHILIBERT. TOURNUS.

covered with vines, and the wine you drink is Burgundy.

Subjoined are the plans and sections of Tournus, 1009-19, showing the narthex roofed with intersecting vaults over the centre portion, and barrel vaults running transversely over the aisles, like the Basilica of Maxentius; and the upper narthex with quadrant vaults over the aisles and lofty nave roofed with the barrel vault. The unique arrangement of the barrel vaults running transversely over the naves from north to south, one to each bay, is also shown.

THE ARCHITECTURAL ASSOCIATION:

CARVING AND MODELLING AS APPLIED TO ARCHITECTURE.

An ordinary fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, Mr. G. H. Fellowes Prynne, President, occupying the chair.

The minutes of the last meeting having been read and confirmed,

Mr. E. Howley Sim, senior hon. secretary, proposed a vote of thanks to Mr. W. G. R. Sprague for allowing members to visit the Royal Duchess Theatre at Balham on the 18th ult., and a vote of thanks to the British Fire Prevention Committee for permitting members to visit the fire-testing station at North Bank, Regent's Park, on the 25th ult.

These motions having been heartily agreed to, and some donations to the library having been announced,

Mr. Sim called attention to the annual soirée, to be held at St. George's Hall, Langham-place, W., on the 21st inst., at eight o'clock. A musical play will be performed, entitled "The Druids' Elect: an Episode of the Ancient Britons."*

The Chairman announced that Mr. Weedon's water-colour class will commence on the 22nd inst. He could not advocate too strongly, he said, the advantages students could derive in joining such a class. It not only helped students in their work, under Mr. Weedon's tuition, but it afforded an opportunity of meeting others in social intercourse.

House List for Session 1899-1900.

Mr. Sim then read the following nominations of the Committee for the house list for next session:—President, Mr. G. H. Fellowes Prynne; Vice-Presidents, Messrs. E. Howley Sim and H. T. Hare; Committee, Messrs. T. W. Aldwinckle, jun., A. Bolton, A. C. Dickie, C. H. Freeman, W. A. Forsyth, B. F. Fletcher, M. Garbutt, A. H. Hart, W. B. Hopkins, F. G. F. Hooper, G. A. Lansdown, H. P. G. Maule, P. J. Marvin, B. Pite, W. A. Pite, H. Passmore, H. A. Satchell, and W. H. Seth-Smith; Hon. Secretaries, Messrs. G. B. Carvill and R. S. Balfour; Hon. Treasurer, Mr. Hampden W. Pratt; Hon. Librarian, Mr. A. S. Flower; Hon. Solicitor, Mr. W. H. Jamieson; Hon. Assistant Librarian, Mr. W. B. Dukes; Hon. Auditors, Messrs. J. W. Stonhold and W. E. Davis; and Assistant Secretary and Registrar, Mr. D. G. Driver.

Any additional nominations to the house list which members may wish to make can, in accordance with by-law 31, be made at the next meeting.

Mr. F. W. Pomeroy then delivered a lecture entitled "Carving and Modelling as Applied to Architecture."

He had ventured, he said, for the sake of comparison, to alter the title and subject of his paper from "Modelling as applied to Architecture" to "Carving and Modelling as applied to Architecture." The whole subject had been exhaustively treated by so many distinguished authors, each from a separate point of view, that it would be presumption on his part to deal with it in the short time they had at their disposal were it not that sometimes a practical and homely view, treated briefly, served to refresh the minds of the advanced student, and started a new line of thought in the beginner. At the outset, he had to confess to considerable indebtedness to a paper by Professor E. A. Gardner, who had given much time and thought to the early Greek carvings and the methods then in use. He was also indebted to his friends Messrs. T. Stirling Lee and Roscoe Mullins for their kind assistance.

Mr. Pomeroy then made some general remarks on the history of art and the manner in which artistic needs spread. When a people had passed through periods of savagery and had settled down and formed cities, the handicrafts developed into arts. From the tribe of many artisans arose the few artists. Simple forms satisfied primitive civilisation; but when the beauty of ornament dawned upon the more advanced man, he placed it all on his church. The mason was not content with plain stones; he must give them meaning. As Mr. Ruskin had said, the first object of ornament was eloquence, and to this object the truths of religion must cry aloud from the very stones; the earthly home of the dead must proclaim the story of the life of its occupant; his effigy preserved in marble; his good actions sculptured in relief. Thus architecture might be likened to a tree: it was the parent stem from which sprang sculpture, and through that nearly all the other arts; therefore, any history of ornament must begin with architecture. There was little doubt that the intention of the primitive artist was to imitate his living models as nearly as possible. It was the great merit of the early Egyptian and Greek sculptors to appreciate the difficulties of attempting to reproduce in granite or marble literal copies of floral or human forms, and they limited their efforts accordingly. Natural forms, to be admissible in their application to architecture must be decorative. Natural though they be, they must be conventionally treated. The monumental simplicity of the Egyptian carvings was a good example of convention, and showed also the natural development of his resources. Working in porphyry, basalt, and granite, severe simplicity was inevitable. The less obstinate and more even-textured marble encouraged the Greek sculptor to greater subtlety of execution, but he never allowed his technical skill to carry him beyond the true sculptural limits. The invariable rule of the Greek carver was to work from a normal front plane, and cut inwards, and consequently this plane was never exceeded by projecting proportions.

In explanation of this, the lecturer drew attention to a photograph of the colossal group of two lions from the gate of the citadel of Mycenæ. There, he said, the masonic form was distinctly retained; the outline of the animals was cut in squarely, and little or no surface carving had been attempted. The whole was a superb archaic work—supposed to be the earliest work of sculpture existing on Greek soil, and, in point of composition and dramatic force, it could not be surpassed. It was easier to trace in an unfinished work the method employed in a craft than in looking at a completed object, and for that reason he drew attention to two photographs of a statue from Naxos, now in the National Museum at Athens The statue itself, according to Professor Gardner, was about two-thirds life-size, and was never finished—perhaps because the sculptor saw that his proportions would not come right.

[Mr. Pomeroy had made a small clay model of the figure, which he exhibited, and he proceeded to explain the sculptor's methods in its production.] The process followed was, according to Professor Gardner, precisely that followed by a beginner in sculpture now, or at any time, when he set to work on a rectangular block of marble from which to hew a statue. First the sculptor drew an outline in full face and in profile on the front and sides of the block. Then he carried these outlines straight through, working from the front parallel to the sides, and from the side parallel to the original front plane. When this process was completed, the statue, from front to side, had the required outline; but in the horizontal section it was perfectly rectangular. When the arms and legs had been similarly outlined, and cut into the required depth, and the face a little shaped, the result was a statue in precisely the condition in which they saw the Naxian statue before them.

The lecturer then quoted from Professor Gardner, who referred in his works to some typical archaic statues in order to ascertain how far it was possible to apply generally to early sculpture the results attained in a single example. In the opinion of that author, it might be inferred that all were made by the same process which could be seen going on in the unfinished statue from Naxos.

A second example of an unfinished statue referred to was one of a group of such statues from Pheneia, most of which seemed to be of fourth century work. Mr. Pomeroy exhibited a photograph of the statue, and he then described at some length the various processes employed in making the statue.

As to models, he thought there could be no doubt that the Greeks used clay models. Phidias could not have made by his own hands even a small part of the Parthenon sculpture, and the most logical conclusion to be arrived at was that he made models and employed a number of craftsmen to carry out the work in marble under his supervision.

The lecturer then compared the carver's method with that employed by the modeller in clay, and with that view he gave a brief sketch of the methods of clay working in early times. From the earliest time modelling in clay was common. The hardening by drying, baking, and burning led to its use for a variety of useful purposes, and in the earliest pottery relics attempts at rude ornamentation could be found. The process of working in clay, among the Greeks as among all other nations, might be considered under three heads, viz., sun-dried clay, baked clay (but without a glaze or terra-cotta), and baked clay with the addition of glaze or porcelain. Sun-dried clay was used by the Greeks for objects for internal decorations. The use of terra-cotta among the Greeks was very extensive; it supplied the most important parts both of public and private buildings, such as bricks, roof tiles, drain tiles columns, and other architectural members,

* See page 393 for an account of the dress rehearsal of the play on Wednesday.

The desire of rendering terra-cotta less porous, and of producing vessels capable of retaining liquids, gave rise to the covering of it with vitreous enamel or glaze. Ancient terra-cottas in figure work were distinguished from modern by their greater lightness and softness. Modelling in clay must have preceded working in bronze or marble. Some early clay figures had part of the body executed in a different material, though such works were very rare; but the extraordinary nature of the combinations was much modified by the colours with which all terra-cotta figures were painted. Many temple images were frequently made of wood. A plaster cast of a remarkable and beautiful statue of a bronze charioteer could be seen at the British Museum. It had been presented to the nation through the generosity of the French Minister, and it showed evidences of wood treatment; the long, straight lines of the drapery looked as if they had been carved from a block of wood. The head, arms, and feet were quite different in treatment and texture, and they must have been modelled in wax or clay.

The treatment of various materials that brought out the full beauty of material and craft was generally the right one. Modelling in clay or soft wax was a system of building up by adding pieces of the material until the surface desired was arrived at. It might be worked with box wood or ivory tools and wire, shaped into certain forms suitable for getting into the parts of the work where it was impossible to use the fingers. But the fingers and thumb were the modeller's tools par excellence—hence the legend of the Potter's thumb. [Mr. Pomeroy and an assistant then gave an interesting and practical demonstration of the method of modelling in clay.] French artists had carried modelling to a high state of perfection—perhaps with a loss of the monumental dignity and repose which were so essential to all architectural work. Whatever the French sculptor had in his mind he worked out with consummate skill, though this very facility had led to a lack of the true sculptural instinct in the choice of what might be represented. Any one who had visited the Paris Salons must have been struck at the fly-away effect produced by the number of statues with their arms and legs thrown about in an extremely restless and startling manner. Although we owed much of our training in modelling to French teaching, we must take care not to fall into the trap which was the result of working in a very facile material. Modelling might be used in architecture for a great variety of purposes—for preparing details for ornament, for stone, wood, or plaster—and one of the best uses it could be put to for an architect was in preparing small scale models for portions or the whole of his building. He knew of no better means of arriving at the general effect of light and shade of a building than in preparing a rough model—say 2 in. to a foot; to the sculptor it was invaluable.

In carving, if the material was marble the treatment must be a marble one; soft stone required a somewhat different treatment, and modelled work should have its distinctive character and not be in imitation of another material. The real carver naturally worked in a manner which was blocky and geometric, cutting from his front plane inwards, and there was no music to him like the ring of the hammer and chisel on a fine piece of marble. The modeller, on the other hand, worked from the back plane outwards, building up piece by piece. The introduction of the pointing machine had caused sculptors to practise frequently altogether in clay, and thereby lose sight of the true glyptic laws, although the advantages secured by the use of this instrument were immense in a busy and impatient age.

The lecturer then showed a large number of excellent lantern illustrations. They included: Assyrian bas-reliefs in the Palace of Assur-Nasir Pal, showing simplicity of treatment with a hard material; the well-known statue of Theseus, by Pheidias, from the east pediment of the Parthenon frieze; Venus of Melos, from the Louvre; Mexican monuments; Roman portraiture, executed by Greek sculptors; Indian sculpture, showing Grecian influence (due to the Greek invasion under Alexander the Great); Renaissance altar, or shrine, in marble, taken from a garden in Padua; examples of Ghiberti's, Donatello's, Cellini's, Michelangelo's, and Della Robbia's work; bas-reliefs by Jean Goujon; portions of a plaster ceiling from Bromley-by-Bow Palace (demolished in 1894); Paul Pindar's house, Bishopsgate, &c; several examples of the French school (by Frémiet, Barrias, Mercié, Rodin, and Dalou. The French sculptors had progressed very greatly, and their work would probably rank fourth in the great schools of sculpture (the Greeks being first); "General Outram," by Foley, and a group in bronze, from the Wellington monument, by Alfred Stevens, who was thought a great deal more of in France than he was in his own country.

The Chairman, in opening the discussion, said that as an instructor Mr. Pomeroy was second to none in his art, and yet his modelling class in connexion with the Association was not as well attended as it might be. It was hard to understand why so many architectural students neglected modelling work, and did not appear to realise its importance in relation to architecture. Perhaps it was due to the multifarious duties of an architect, which caused him to miss using such a valuable help in the true art side of his work. There was no art or craft more useful to architecture than modelling, and if architectural students were to work out mouldings and the orders, &c., by means of modelling, they would learn more than by working out mere drawings of them on a board as at present. For one thing, they would get a more perfect idea of proportion. The present line system led men into a narrow groove, and they failed to get a right idea of rotundity, or true proportion. Mr. Pomeroy must feel disappointed that more appreciation of his great and noble art of sculpture was not shown by architects. Mr. Pomeroy had truly remarked that architecture is the mother of the arts, and as architects they ought to feel that the sculptors of the present generation and the immediate past had had more sympathy with architecture and architects than painters had. He hoped that some of those present would express their views as to why modelling is not practised amongst architects more than it is. The lantern slides which Mr. Pomeroy had shown illustrated in a beautiful way his remarks, and his demonstrations had been useful in many ways. He would like to ask Mr. Pomeroy, in regard to sculpture work in relief, what depth of relief he preferred for decorative purposes. Most of them had seen beautiful ancient work in shallow relief, and it would be useful to know what a sculptor's views were as to the most effective relief to work in for decorative purposes.

Mr. T. Stirling Lee, in proposing a vote of thanks, said that sculptors who worked in relation to architecture felt that the real field for sculpture was in association with architecture. A sculptor was a carver—the word sculpture meant to carve: it did not mean to model—and the sculptor who worked in relation to architecture found that the architect used a figure or ornament in a frieze or pediment in order to enrich his architecture, to obtain light and shade, and to illustrate the objects of a building. A sculptor desired nothing more than to work on a pediment, frieze, panel, or cap. A sculptor ought to do his work from a carver's point of view. The real meaning of craft meant archaic, and archaic work was always true, and nearly always true art, and that was the point of view that Mr. Pomeroy wanted to emphasise. Mr. Lee then described, with the aid of a model, how the sculptor, working in relation to the architecture, had to think over every line of his work in order to get it in harmony with the architecture. The difference between modelling and carving was that in carving one did not take off more than one wanted, and in modelling one did not put on more than one wanted. As regards the Chairman's question as to the depth of relief, it depended upon the work. A sculptor never designed a piece of work to go with architecture without thinking of its surroundings. The light and shade of the mouldings governed the height of a relief. Sculpture which had to go with architecture was no longer a living thing; it was a piece of masonry—so much stone decoration, either giving light and shade or making a certain feature in the building.

Mr. W. H. Seth-Smith, in seconding the vote of thanks, said that Mr. Pomeroy had brought out, in a way that he (the speaker) had never realised before, the great distinction between modelling and carving, and the great importance that distinction made in architectural sculpture. They must all realise how true it was that the sculptor must be particularly in sympathy with the work of the architect. The vertical surface of a wall must to a certain extent continue through the carved panels if there was to be harmony. It was an interesting problem how far, where there were large rounded surfaces, as there were in elaborate Gothic work, that principle would be observed, or how far it might be deviated from. But, in the light of what Mr. Pomeroy had said, there was a more immediate problem for discussion, viz., terra-cotta as a material for building. It was being largely employed at the present time, and it was a question how far the principle he had referred to could be applied in regulating the amount of ornament and the method of treating that ornament in terra-cotta. Architects were tired of seeing the great elaboration of terra-cotta and faience which ruined so many buildings, and those who had heard Mr. Pomeroy had learnt something as to the laws of restraint in that material. As to the importance of models, any one who had made models, however rough, of mouldings or larger features, or even of an entire building, would thoroughly support what Mr. Pomeroy had said. Modelling was a recreation, a real enjoyment to an architect when time could be devoted to it. If he could even model his mouldings it would be the greatest possible recreation and rest to him in the course of the routine work of the office, which took up so many hours. He had often thought that it would be well if sculptors devoted themselves to the production of smaller works, something like the Tanagra statuettes; they were often very beautiful, but he did not know if there was a demand for them in England.

Mr. Pomeroy: Not at the price.

Mr. Seth-Smith, continuing, said as to working over bronze casting, there was a disposition just now rather to leave the surfaces of cast-metal things too coarse.

Mr. Millar having referred to modelling in tow and wax,

Mr. Gandy said he was greatly interested in terra-cotta, and he was sorry to hear the material objected to on account of the facility with which it was used and because of the way in which so many modern buildings were smothered in terra-cotta ornament. That was not the fault of the material, but of the architects who allowed it to be used in that way. As a previous speaker had pointed out, most modellers' work began with the clay, and the difference between that work and sculpture was that stone was carved on the spot. With clay, the material could be put up and its effect tested before the material was burnt. Mr. Pomeroy objected to the hard burning which terra-cotta was now generally subjected to; but Mr. Pomeroy would not put soft terra-cotta models out of doors and expect them to last. If they were designed to last they must be fired hard, and if the colour did not suit it could be treated in enamel colouring. At the last meeting of the Institute of Architects some very severe remarks were made as to sticky glazing, but as to terra-cotta it could be fired without glaze at all, and so thin that the touches of the modelling need not be obscured at all—a very great point, for, after all, if they modelled in clay they wanted, when the clay was fired, to see the result of the tool.

Mr. A. H. Hart said, in reference to the Mycenæ gate mentioned by the lecturer, he (the speaker) had had the pleasure of seeing it on the spot, and he could bear testimony to the wonderful effect of that early sculpture—sculpture which had not advanced to the period which might be called perfect. The restraint which was so obvious in such early work ought to be appreciated, for restraint was a great feature in sculpture. In sculpture, when work is over finished, certain desirable qualities (such as regard for the material) may be sacrificed; and material is an important consideration in sculpture, as in all the arts. Again, the modern French method of sculpture, where there is little restraint, seems ill-matched with a dignified stone architecture.

Mr. E. Howley Sim asked Mr. Pomeroy what his views were as to colouring sculpture in buildings. Most Greek sculpture was more or less coloured, and one generally looked upon it as a rather barbarous thing to do now. And as to colouring statues, in the Royal Academy a year or two ago there was a curious coloured statue.

Mr. J. Broad said, as to terra-cotta, it was not so much the material as the worker who was to be condemned. He quite agreed with what

Mr. Pomeroy had said about carved modelling, and he admired the flatness of treatment referred to; but that was the result of not working on the hard material that the carver was accustomed to, which put him into the habit of getting roundness or regularity in relief. It was the training that the modeller received, and not the material, which was at fault.

Mr. Pomeroy: That is my point; the material influences the method of working.

Mr. Broad, continuing, said that by the carver's process the better plaster work was generally modelled, and it was because of his experience in carving that he was able to get the modelling under control. If the modeller in terra-cotta had the carver's training that would, perhaps, lead to a better result being obtained with the material.

The vote of thanks having been carried by acclamation,

Mr. Pomeroy, in replying to a number of questions, said that terra-cotta in relation to architecture was a big question, which could not be dealt with then. His own feeling, however, was that where terra-cotta was used more as dressing on brick structure it was most satisfactory. In some Italian work the terra-cotta decoration and dressing was very agreeable, and was of a nice colour. As he had mentioned, nearly all the terra-cotta in the Etruscan, Greek, and Italian periods was covered with a glaze or painted. As to tow, that was a material used by certain sculptors for certain purposes, and it was quite well known to all workers in modelling or carving. As to the depth of relief, it depended on the surroundings. Every new work was a new problem—there were no receipts. There were certain cheap lines which could be taken up, but that was not art, and artists took a higher view of the matter. Colour in relation to modelling or carving was another big question. In the conditions in which the Greeks lived, colour was no doubt an essential matter with them, but colour in English work should be used with great reticence, and, when used, with a limited palette, although there was great scope for its use in London. He did not see why we should have gloomy bricks and mortar always; he thought that effects of light by gilding, &c., might be attempted. As to the polychrome figure in a recent Royal Academy exhibition, that was by a sculptor-painter named Gerome, a Frenchman. It was a statue of the Goddess of War, executed in bronze—a very beautiful work, showing how alert the French are in making the most of the quality of a material.

The Chairman announced that the next meeting will be held on the 28th inst., when Mr. F. W. Macey will read a paper on "Specifications."

The meeting then terminated.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—At the meeting on the 11th inst., the President (Mr. Geo. S. Hill) in the chair, Mr. John Arthur read a paper on "Feuing Plans and their Preparation." In introducing the subject, he referred to the fact that in cities this class of work was generally placed in the hands of civil engineers and surveyors to carry out, a state of things for which he thought architects themselves were largely to blame, from their lack of interest and, in many cases, incompetency for the work. He submitted, however, that with regard to the plotting out of country estates for feuing purposes, the architect, from his training and experience, was the one best qualified to judge how to take full advantage of their natural beauty and surroundings, to give to their prospective roads and houses their highest degree of picturesque aspect and utility, and he exhorted those present to take a greater interest in this work, and to follow more closely in the footsteps of their country brother architect in this respect. Mr. Arthur then referred to surveying and levelling as being two necessary qualifications of the estate architect, and proceeded to show in detail, by illustrations and demonstration, how to survey and level a piece of land, and the use of the various instruments required for that purpose. This led up more particularly to the subject under review, and he went on to describe what steps were necessary to be taken with regard to the preparation of feuing plans for large estates, using Government Ordnance maps as a basis for that purpose, to show how and where to lay off new roads to best suit the arrangements and requirements of feus, how to take levels along the line of old and new roads, and how to reduce these levels to a common Ordnance datum. The paper was fully illustrated by large scale drawings and examples of feuing plans. A vote of thanks to the essayist brought the meeting to a close.

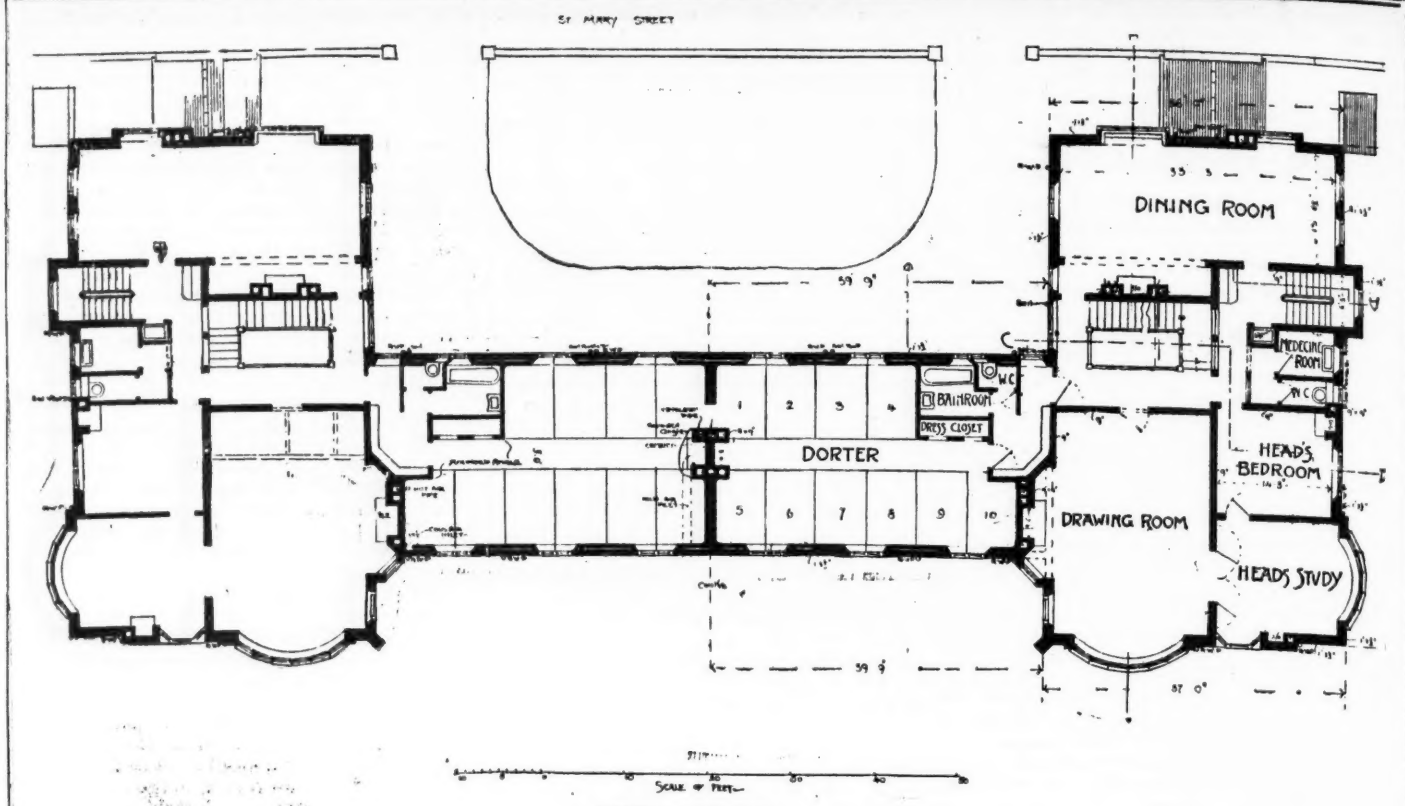
EDINBURGH ARCHITECTURAL SOCIETY.—On Wednesday, the 12th inst., Mr. J. Fairweather, representative of the Glasgow Architectural Association, read a paper entitled "Minor Points in Practice." Mr. A. Greig, Vice-President, was in the chair. After some advice on the management of clients in the early stages of an architect's career, the lecturer proceeded to discuss the materials and constructions common in domestic work, always contrasting prime costs with probable efficiency, and giving his audience the benefit of his own experience on a multitude of those minor questions on which it is so difficult for an architect at the outset to form a good judgment, and on which success so largely depends. On the matter of hollow walls Mr. Fairweather spoke at some length, and finally gave his verdict in favour of solid stone, with strap and lath, for Scotch work at least. Many ingenious economies were suggested; but at the same time the lecturer made it clear that true economy consisted in a reasonable outlay at the first.

BRISTOL SOCIETY OF ARCHITECTS.—The monthly meeting of this Society was held on the 10th inst. at the Fine Arts Academy, Clifton, Mr. W. L. Bernard, the President, being in the chair. Mr. Edgar Singer of Frome, read a paper on "Memorial Brasses and Enamels," and the lecture was illustrated by numerous rubbings of fine specimens of German, Flemish, and English brasses; the different varieties of enamels were explained, and specimens of Limoges, Cloisonné, &c., exhibited. The lecturer traced the evolution of these interesting links with the past from the simple inscribed cross of pre-Christian times to the elaborately chased and enamelled brasses found on the Continent in the Middle Ages, which so clearly pourtray the costume, armour, and textile fabrics of that period.—The voting-papers for the election of officers and council for the ensuing session were opened, Mr. W. L. Bernard being again re-elected President. Messrs. Joseph Wood and Frank Wills were elected vice-presidents, and the hon. secretary and treasurer (Mr. H. Dare Bryan) was unanimously re-elected to fill these offices. The members of the council were Messrs. Bond, La Trobe, Oatley, W. S. Paul, Skinner, and J. Foster Wood.

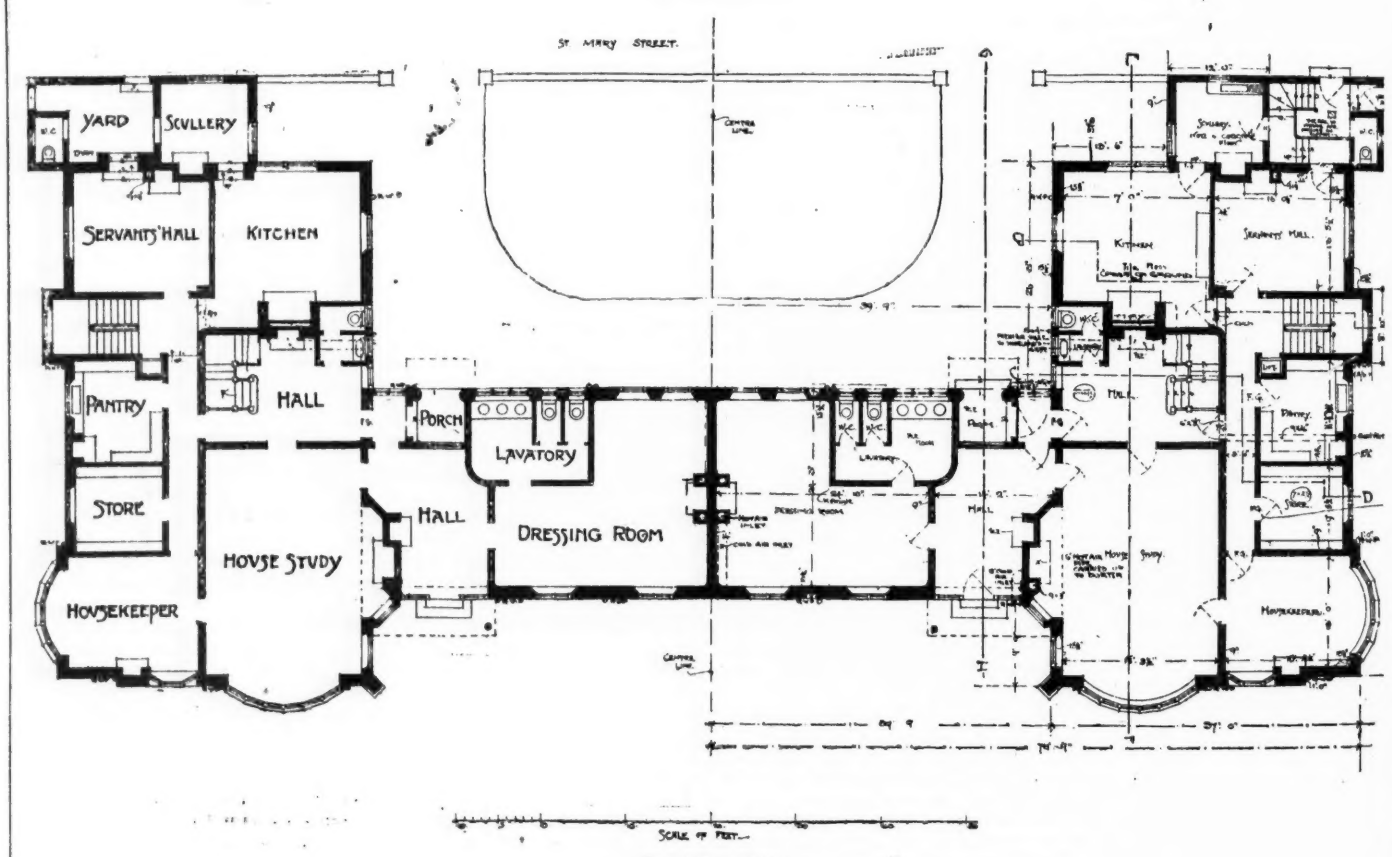
SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The annual meeting of this Society was held at the School of Art on the 12th inst., Mr. R. W. Fowler presiding. The following gentlemen were elected members of the Society:—Mr. Henry Coverdale, as Fellow; Mr. W. T. Lancashire, as an Associate; and Messrs. S. M. Gibson, D. H. Loukes, and B. J. B. Marsden, students. The treasurer's statement of accounts, which showed a balanee in hand of 124*l*., was adopted. The twelfth annual report of the Council was read by the hon. secretary and adopted. It stated that the total membership is 116, which is the highest in the history of the Society. The Council had their attention called to the case of an architect's client who had declined to comply with the usual custom of paying half (2½ per cent.) the usual commission on the signing of the contract, and the remainder in instalments, in accordance with the Royal Institute of British Architects' scale of charges. The Council called the client's attention to the matter, and the Royal Institute of British Architects' scale of charges was sent to him, with the result that the commission was paid in due course. The Council also sent out copies of the Royal Institute of British Architects' scale of charges to the practising members of the Society, and to the School Board, solicitors, and accountants, and hope this course will have the effect of improving the status and position of the architects and surveyors of the City. The Council have devoted a considerable amount of time to the discussion of proposed conditions of contract proposed for adoption by the Master Builders' Association. On May 18, 1898, Messrs. J. Biggin, G. Webster, H. Brumby, and J. Spink, on behalf of the Association, met the Council and discussed the various points at issue, and more particularly the resolutions of the Society at the special meeting held a nuary 26, 1898. The deputation quite agreed with resolutions Nos. 1 and 2 on condition that the schedule of prices should be considered a confidential document, which should not get into the hands of the architects' clients, to which expression of opinion the Council fully acquiesced. With regard to resolution No. 3, as to arbitration, while unanimous in desiring an arbitration clause of some kind, the deputation were not unanimous as to the extent or wording of the clause, and finally agreed to consider modified clauses quoted to them, together with the Royal Institute of British Architects' conditions of contract, and afterwards communicate their decision on the matter. Correspondence followed, and ultimately Mr. Spink, on behalf of the Master Builders' Association, forwarded an entirely new set of conditions which he hoped the Society would adopt, and which he stated were adopted in Leeds. The Council appointed a committee to consider the matter, and found that the newly proposed conditions were still more objectionable and one-sided, and contained a clause requiring arbitration on every point that might arise during the course of the contract, and which would, in the Council's opinion, prove most detrimental to both the architect's and client's interests, and would not, either, benefit the contractor in most cases. The Council hope, therefore, that the members of the Society will in no case consent to any such form of agreement, especially as they know many builders have signed contracts without requiring such objectionable conditions. The Council have also had before their notice letters from Messrs. Spink & Hodkin with regard to the lock-out of plasterers, and from the Yorkshire Builders' Federation with regard to the Workmen's Compensation Act. In connexion with the latter, the President was good enough to inform the Society that in the course of his practice he had occasion to consult his solicitors with regard to a client's liability under the Act if the contractor became bankrupt or was otherwise unable to pay compensation under the Act. His solicitors advised him that corporate bodies, being employers of labour, would still be liable, but private employers or clients would be exempt. The Council are much indebted to the President for his opinion, which they think will prove of service to the members of the Society. The following gentlemen were then elected officers and Council for the year 1899-1900:—President, J. Smith, F.R.I.B.A.; Vice-President, A. Smith Denton; Hon. Treasurer, Fred Fowles, F.S.I.; Hon. Secretary, W. C. Fenton; Council, the above and Messrs. E. M. Gibbs, F.R.I.B.A.; C. Hadfield, F.R.I.B.A.; C. J. Innocent, F.R.I.B.A., F.S.I.; T. Winder, A.M.I.C.E; J. B. Mitchell Withers, A.R.I.B.A.; and J. R. Wigfull, A.R.I.B.A. A vote of thanks was accorded to the officers and Council for their work during the past year.

LEICESTER SOCIETY OF ARCHITECTS.—On the 12th inst. Mr. J. A. Gotch delivered a lecture on "The Homes of Queen Elizabeth's Courtiers" at the Technical and Art Schools, under the auspices of the Leicester and Leicestershire Society of Architects. The tranquility of Queen Elizabeth's strong rule proved, said the lecturer, a strong aid to architecture, and for sixty years its energising influences lasted; indeed, there was scarcely a village in England in which the architecture of 1560-1620 (covering the reign of Elizabeth and that of James) was not represented. The Elizabethan age was one, the lecturer said, in which magnificence of architecture was studied, and this at the expense of convenience, and sanitation in those days was unknown. Lantern views of a large number of illustrations of stately buildings (exterior and interior) erected in the Elizabethan age were shown.

THE DECORATION OF ST. PAUL'S.—In the House of Commons, on the 17th inst., Mr. Carvell Williams asked the First Lord of the Treasury whether, in view of the fact that St. Paul's was a national building, the Government would cause an inquiry to be made as to the expediency of further carrying out the scheme of internal decoration now in course of execution?—Mr. Balfour: The Government has no control over the fabric of St. Paul's Cathedral. As the hon. member is aware, the Dean of St. Paul's has stated that a memorial signed by some distinguished critics dealing with a certain portion of the new work will receive the fullest consideration. In these circumstances, I am confident that the proper authorities of the Cathedral will not sanction anything being done that is distasteful to the general body of public opinion



FIRST-FLOOR PLAN:



GROUND PLAN:

Dames' Houses, Wycombe Abbey School.

Illustrations.

ILLUSTRATIONS OF BURGUNDIAN CHURCHES.

THE four plates from the churches of Autun, Vézelay, and Vermenton, given in this issue, are from photographs sent by Professor Simpson as illustrations to his paper on Burgundian Churches, read recently before the Liverpool Architectural Society, which is printed in the present issue, and to which the reader is referred.

NEW HOUSES, WYCOMBE ABBEY SCHOOL.

THE Earl of Carrington's country seat, Wycombe Abbey, was recently sold to the Girls' Education Company and converted into the nucleus of a Girls' Public School, under Miss Dove, of the well-known school of St. Leonards at St. Andrews, as Head Mistress.

Extensive works, consisting of new class-rooms, dormitories, &c., and entire resanitation have been carried out under the superintendence of Mr. W. D. Caröe, in connexion with the Abbey building.

The illustration shows one of two blocks of new semi-detached houses, in the Abbey grounds. Each house is planned to contain twenty-six pupils. The first block is already occupied, and the second will shortly be complete.

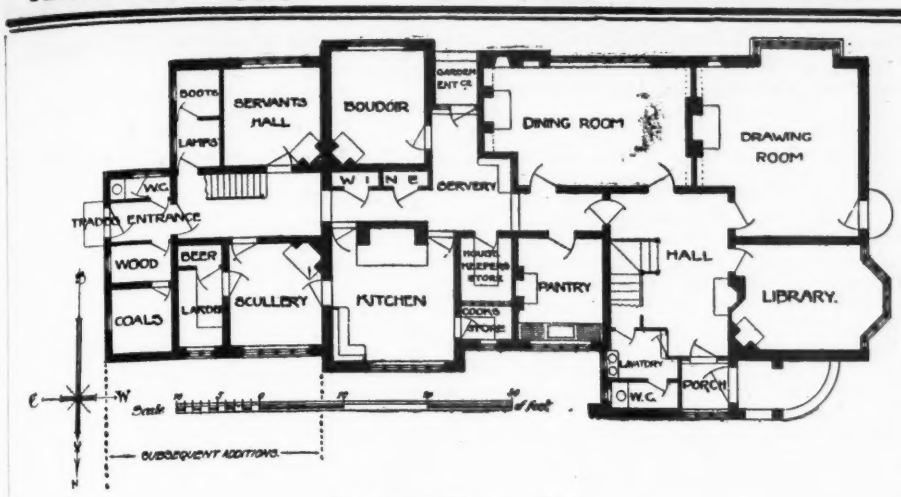
The contractors are Messrs. Norris & Son, of Sunningdale, and Mr. R. Dye is clerk of the works. The drawing was in last year's Royal Academy exhibition.

Wycombe Abbey has no historical interest. A Jacobean red brick house, called Lokes House, existed previously on the site, and some portions of the internal walls still remain. The present structure, erected at the beginning of the century, was by Wyattville—partly of stone, but largely of imitative cement, with an attempt to be of the Perpendicular style.

Turner made the house, during its construction, the centre of a pleasing topographical drawing, one of a series illustrative of the Thames.

PROPOSED MEMORIAL, HORNCASTLE.

THIS design was submitted in competition for the "Stanhope Memorial" at Horncastle. The form of the memorial was suggested—as may be seen—by a well-known timber "Market



House near Pinner. Plan.

Shelter." The plan is octagonal, and in the hollow central shaft there is a fire bell.

The design is by Mr. G. Christopher Carter, and the drawing was exhibited at the Royal Academy of last year.

HOUSE AT EASTCOTE, NEAR PINNER.

THE plan of this house was largely extended since the building was nearly completed. The view shows the entrance front as originally designed.

The ground floor is faced with red brick and the first floor with rough-cast of a finer texture than is ordinarily adopted; the roof is of red tiles. Mr. W. Howard Seth-Smith was the architect, and Messrs. James Smith & Sons, of Norwood, were the builders.

EXETER CATHEDRAL.

WESTERN BAYS ON SOUTH SIDE.

THIS unusual point of view was selected to better illustrate the special character of the cathedral, for the different manner in which the stone has weathered on the south side permits of a better appreciation of the great breadth and dignity of the work.

The cathedral has been so fully dealt with in the *Builder** that it will suffice to draw attention to the indications of the north walk of the cloisters, which was included within the buttresses, these being pierced for a passage against the aisle wall.

A. NEEDHAM WILSON.

* See "Exeter" in the "*Builder* Cathedral Series," under date June 6, 1891

THE ARCHITECTURAL ASSOCIATION SOIRÉE.

A DRESS rehearsal (ladies' night) of the musical play in connexion with the Architectural Association soirée for this year was given at St. George's Hall, Langham-place, on Wednesday evening, when a large party assembled.

The play, in two acts, and entitled "The Druids' Elect: An Episode of the Ancient Britons," was written by Messrs. G. B. Carvill and Gervase Bailey, the music being by Mr. Leonard Butler. The story practically opens with the entry of the Druids, a body of stately and picturesque characters, and the first Druid refers to an approaching election to the council—presumably the council of an Institute of Ancient Britons—due to the death of the late-lamented Stucco. Two well-known and much-respected architects, Messrs. Ashlar and Rubble, are candidates for the vacancy, and both are said to be hard at work canvassing, though they both strenuously protest against any such accusation. In a professional journal of the period, *The Antediluvian Advertiser and Neolithic News*, the claims of the rivals are set forth in the following manner:—"Ashlar for art; Rubble for reform. Britons be bold. Back the best builder and beautify Briton." Rougepot (a thin disguise for "M. Louis de Rougemont" of recent notoriety), who has been elected the Arch-druid, then comes upon the scene, with a lyre in his hand, to the last bars of "The Wearing of the Green." He announces that the Romans (*i.e.*, a chartered company force), "a mighty people from a great city in the south, beyond the sea," have landed, with General Rodesius at their head. Some amusing remarks are then made as to the intentions in Briton of Rodesius; and Rougepot, whose geographical and natural history knowledge is surprising, sings a song entitled "Limited," *apropos* of company promotion, planning on "a site that is distinctly limited," &c. Subsequently, both Ashlar and Rubble interview the Arch-druid in reference to the election, with the view of getting him to "work the omens" in their respective favour. The Arch-druid is not to be moved for less than 50*l.*, though this sum, he tells Ashlar, who first interviews him, "will settle the election in your favour." Ashlar indignantly declines to be party to any such transaction; but Rubble, on the other hand, has no such scruples, and he pays over the money. Success at an election in those unregenerate days was followed by a sacrifice—sometimes a human sacrifice—and the Arch-druid proposes that in the event of Ashlar being elected that eminent architect shall be called upon to sacrifice his daughter, Blodwen. At the election which shortly follows, the candidates state what they are prepared to do if elected. Ashlar, "just a simple English gentleman," who has designed Vauxhall Bridge and the Temple of the Sun at Stonehenge, is willing to "free all the classes, and issue new passes without any fees being paid;" while Rubble, "an honest British workman, in favour of an eight-hour day," and whose executed work has been mainly of a naval character, expresses his intentions in some verses in which he promises, if elected, to "nullify Building Act law, and double architects' charges with short working days." In the result, Ashlar is elected by a very primitive method, and, contrary to the expectation of the Arch-druid and Rubble, he is prepared to sacrifice his daughter. An incantation by the Arch-druid occasioned much amusement.

There is a very amusing stone-laying ceremony in the second act, an enormous trowel being used, after which Architopius, a travelling student, belonging to the Chartered Company's forces, produces some sketches he has made, including a remarkable drawing of Vauxhall Bridge. "That's what they call Cyclopean architecture, isn't it?" queries one of the characters. "No; County Council architecture," is the reply. In the course of conversation, the Romans inform their Briton friends that an Institute had been founded at Rome for the promotion of elementary knowledge amongst architects, and Rodesius sings some amusing verses entitled "The Institute at Rome," of which the following are samples:—

"The students went in six by six, when asked the process
of burning bricks,
They said, 'Oh, that's one of the builder's tricks at the
Institute at Rome.'
The students went in nine by nine; when told to define a
building line,
Said, 'a thing invented to spoil design at the Institute at
Rome.'"

Rodesius also sings later on a song called "Simplicity," the following verse of which we quote:—

"The art of modern architects is tending towards the plain
And simple, yes, the simple;
We build for Truth and Beauty, and not for worldly gain,
We're simple, oh, so simple.
If you want to build a house that will the mouths of critics
stop,
Put four bare walls with windows like a warehouse or a
shop,
And a fat unwieldy drain-pipe from the bottom to the top;
That's simple, oh, so simple.
Oh, the simple simplo-maniac has got us in his claws,
He'll soon dispense with windows, and he'll do away with
doors;
We'll return to what we were before the dawn of history's
page,
And we'll play the noble savage in the Neolithic Age."

As to the contemplated sacrifice, Rodesius (primed by the conscience-stricken Rubble who, while suffering from the pangs of remorse, gives a very good imitation of Sir Henry Irving's style), in an amusing parody of Mark Antony's oration, denounces Rougepot and Rubble, and both these worthies are likely to be killed by the angry Druids, Romans, and girls. Rougepot, however, saves himself by confessing to the Romans that he is their "long-lost Griennus," and Rubble is saved by the interposition of Superfinus, a Roman lieutenant and the lover of Blodwen.

This, omitting the love-making business, is a rough outline of a play which is, from many points of view, a decided success. The play is bright and attractive, well staged and acted, and full of "point" and interest without being vulgar. The entertainment is probably the best and most satisfactory of the kind the Association has ever given. The songs, especially those by Mr. S. Constanduros and Miss Sophie Tyler, were well received, several encores being given. The performers, without exception, acted well; special praise being due to Mrs. Alfred Stalman and Messrs. H. Passmore, Alfred Stalman, G. B. Carvill, and F. D. Clapham. Every one appeared to be part-perfect, and to the production of the play a great deal of time and labour must have been devoted. At its conclusion, the authors appeared in response to a unanimous call.

The following were the *dramatis personæ*:—Lucius de Rougepot, *alias* Griennus (Arch-druid and Adventurer), Mr. Herbert Passmore; Ashlar and Rubble (Ancient Britons, candidates for the Council), Mr. Alfred Stalman and Mr. G. B. Carvill; Rodesius (General in command of the Roman Chartered Company's forces), Mr. F. D. Clapham; Superfinus (a lieutenant), Mr. S. Constanduros; Pennialinus (a correspondent), Mr. Gervase Bailey; Architopius (an architect), Mr. Frank Foster; Toplinus (with Chartered Company's forces), Mr. J. Hayes Wilson; Letitia (a Roman lady of uncertain age betrothed to Superfinus), Mrs. Alfred Stalman; Ellalyn, Lettilyn, Gwendolen, Gwynne, and Llyllien (British maidens), Misses Ada Yerbury, K. Rimell, Blanche Selig, Dolly Jennings, and Ethel Atkins; and Blodwen (Ashlar's daughter), Miss Sophie Tyler. Chorus of Druids, Romans, and British maidens, Mesdames Edith Black, Nellie Carvill, Daisy Englehardt, Helena Kelly, Jessie Maude, Ethel Miller, Berthe Selig, and Elsie Williams, and Messrs. A. Canner, J. Chapman, E. S. Collins, S. Elston, H. Franck, Howard Holt, A. C. Kelly, Douglas Lay, C. Pellew, W. Sneesby, A. G. Turner, and A. H. Whichcord. Manager, G. B. Carvill.

The soirée is to be held on Friday at St. George's Hall, when the play will be given again.

THE FIRE PREVENTION TESTING STATION.

THE Testing Station of the British Fire Prevention Committee is already showing considerable activity, the investigations generally taking place on Wednesdays.

Among the tests in hand are several with floors and partitions of an ordinary description as allowed by the Building Act, including solid timber floors and floors with various aggregates of concrete, all of which are, of course, not subject to any patents or the interests of any special firm. Of methods of the latter class—*i.e.*, patented floors, patented ceilings, &c.—a considerable number are, however, also under investigation, and amongst those in hand at the moment are a floor by the Columbian Fire-proofing Company, two floors of the Expanded Metal Company, a ceiling of the Asbestic Company, and windows by the British Luxfer Prism Company.

The tests, which are carried out on scientific lines, but with the practical purpose in view, are conducted by representatives of the Executive, the Council, and the body of members in rotation, and their reports are circulated (approximately) bi-weekly. At the tests carried out on Wednesday afternoon Major-General G. R. Festing, South Kensington, and Mr. Arthur Cates, the Surveyor to the Crown, were present, as representing the Council; Messrs. Edwin O. Sachs (Chairman), F. R. Farrow, Max Clarke, Charles Goad, Ellis

Marsland, and Edmund Woodthorpe, as representing the Executive. A number of District Surveyors represented the general body of members, whilst the following four gentlemen attended as special visitors :—Mr. J. McDermott (War Office), Mr. J. B. Westcott, Surveyor (H.M. Office of Works), Mr. J. C. Murray (Admiralty), and Mr. Capon (London County Council).

The number of members and visitors attending tests has, of course, to be strictly limited.

THE BUILDING TRADE DISPUTE.

THERE is very little to report this week in reference to the plasterers' lock-out. A meeting of the executive committee of the London Central Association of Master Builders was held on the 13th inst. at the offices, Bedford-street, Strand, but the meeting was a private one.

The master plasterers who, up to the present, have been organised only by being federated through the Master Builders' Association, have decided to have a national association of their own which, while continuing to work in conjunction with the builders' organisation, will pay attention to the interests of plasterers in particular. This decision was arrived at at a recent meeting of about one hundred delegates from all parts of the country, held in Bradford. Mr. J. W. Sugden, of Bradford, was elected first President. The present strike was subsequently discussed, and a communication was forwarded to the National Builders' Association.

We are informed on very good authority that during the first three weeks of the lock-out the funds of the National Association of Operative Plasterers were reduced by about 25 per cent., and this in spite of the fact that, in addition to the special levy, the members paid in during this time about 1,000*l.* in ordinary contributions for sick benefit and superannuation purposes. It is regrettable to see funds that have been contributed for years past by workmen for insurance against sickness and old age so recklessly squandered in the attempt to enforce a system of trade intolerance which could bring no real benefit to the workman.

The Standing Committee of the Master Builders of Great Britain and Ireland held a meeting at the Midland Hotel, Derby, on Wednesday for the purpose of considering the present state of affairs in the building trade. Alderman Holdsworth, of Bradford, presided. The question of a general lock-out in the building trade came up for discussion, and the opinion of the meeting was practically in favour of such a course being adopted. Several of the speakers urged that important questions of principle affecting the prosperity, and, indeed, the very existence of the building trade, were at stake; that the struggle was one which the masters could not afford to lose; and that every effort must be employed to gain the victory. These sentiments found general acceptance. With a view to the lock-out becoming operative at an early date, the masters in the districts associated with the Federation are turning their attention to the question of organisation.

COMPETITIONS.

AGECROFT CEMETERY, SALFORD.—Sanction to use this land for cemetery purposes having been received by the Salford Corporation, the drawings sent in in competition were adjudicated upon. Design No. 19, submitted by Messrs. W. R. Sharp and Fred Foster, 28, Deansgate, Manchester, was awarded the first premium of £50; design No. 1, submitted by Mr. Henry Lord, F.R.I.B.A., of John Dalton-street, Manchester, was awarded the second premium of £30; and design No. 16, submitted by Mr. A. H. Mills, Temple Chambers, Brazennose-street, Manchester, was awarded the third premium of £20. The twenty-nine sets of drawings sent in will be on view at the Town Hall, Salford, from Monday, the 17th inst., until Saturday the 29th inst.

CARTWRIGHT MEMORIAL HALL, BRADFORD.—One hundred and fifteen sets of drawings have been received in this competition. Mr. Waterhouse, who is acting as assessor, will commence his examination of the drawings on Monday next. As soon as the premiated designs have been selected, the whole of the drawings will be publicly exhibited.

ENGINEERING SOCIETIES.

INSTITUTION OF JUNIOR ENGINEERS.—At the meeting on the 14th inst., a paper was read on "Piles and Pile-Driving," by Mr. H. Cartwright Reid. Mr. Basil H. Joy, chairman, presided. In introducing the subject the author made allusion to the antiquity of pile-driving (as evidenced by the pile dwellings of the Stone Age, and the recent discoveries of Mr. W. A. Donelly, of the "Crannog," on the banks of the Clyde, near Dumbarton Castle), to the preservation of piles under old London Bridge for 600 years, and to ordinary foundations at Chatham Dockyard. Various types of piles were then described :—Bearing piles for remedying an unstable foundation, which was effected by transferring the weight to a firmer material below, by consolidating the loose material itself, or by holding the piles in position through the friction of their perimeter; sheet piling, for facing to wharves, for cofferdams, and to surround excavations made in waterlogged areas, as at Chatham Docks, and in compressible soils to prevent material from escaping from under additional weight; true sawing was essential for water-tightness, and the difficulty of driving regularly was partly overcome by the use of grooved and tongued piles; correct shoeing and ringing were of great importance; details of the shoes in general use, as well as the special shoe for grooved piles were described. Various kinds of cast-iron screw piles were illustrated, and attention drawn to a recent form of wrought iron and steel built-up pile for driving, rolled from 6½ in. to 13 in. diameter. Different forms of pile drivers were dealt with, and the more modern endless chain driver, as well as the "Lacour" Steam Monkey, compared with them. The sinking of screw piles and the advantage of the use of the water-jet in sandy soils were alluded to. Diagrams indicating the resistances met with in driving a pile were shown; these resistances were due principally to the inertia of the pile itself, the elasticity of the pile and the ground, the resistance at the point, and friction of the sides of the pile. As the value of the two latter varied with every different section of ground, there was difficulty in obtaining a correct formula to apply to pile-driving. Empirical formulæ, which depend upon the amount of work expended in driving, found most favour, though many of these neglected entirely the quality of the timber, the length of the pile, and its sectional dimensions. The results of the formulæ in use varied in the value assigned to a pile under given conditions, and a varying factor of safety was recommended, so that it was probable, as accurate results could be obtained from Rankine's statement, that the actual load applied varies from 200 lbs. in soft ground to 1,000 lbs. on reaching firm ground, per square inch of sectional area, providing the pile is supported and not free to bend. The detrimental effects in practice of high falls of the monkey were then considered. They were caused by the rapidity of the blow not allowing the inertia of the pile to be overcome before the full force of impact was developed; in the more modern practice, heavier monkeys and low falls were employed, thus "coaxing" the pile down without destroying it. Rapidity of blow of the monkey kept the ground surrounding the pile from close contact and effected a considerable economy, as the longer the interval between the blows the less the pile sank per blow. Experiments showed that piles offered a greater resistance to sinking after absolute quiescence than immediately after the cessation of driving, though this effect was more pronounced in soft or wet ground than in dry and coarse gravel and sand.

BOOKS RECEIVED.

THE COLUMN AND THE ARCH. By W. P. P. Longfellow. (Sampson Low, Marston, & Co.)

INWOOD'S TABLES FOR THE PURCHASING OF ESTATES AND VALUATION OF PROPERTIES. Twenty-fifth edition; revised and extended by W. Schooling, F.R.A.S. (Crosby Lockwood & Son).

GATESHEAD AND DISTRICT BUILDERS' ASSOCIATION.—At a meeting of the master builders of Gateshead, on the 15th inst. in Mr. Morris's Hall, Cuthbert-street, it was agreed to form an association to be named the Gateshead and District Master Builders' Association. The required officers, together with a committee, were duly elected. It was decided to continue to resist the demand made by the labourers for an advance.

The Student's Column.

ARCHITECTURAL HYGIENE.

XV.—VENTILATION.

1. *General: Movement of Air and Air Currents.*
2. *Composition of Air.*
3. *Impurities in Air.*
4. *Respiration and Combustion.*
5. *Quantity of Air Required and its Measurement. Cubic Space. Quantity per Person per Hour. Velocity.*
6. *Inlets: Position and Size.*
7. *Outlets: Position and Size. Extracting Power of Flues.*
8. *Natural Ventilation.*
9. *Artificial Ventilation.*

IN this chapter the important questions of ventilation, lighting, and heating are introduced by some preliminary remarks on ventilation.

The three subjects are so interwoven that it is difficult, and perhaps impossible, to think about or discuss them apart; we shall, therefore, in the first place confine ourselves to the composition and movement of air currents, after which we shall proceed to deal with the remainder of these important subjects, and then give actual examples of executed works.

1. *General.*—The necessity for ventilation need not be here discussed, as every one knows that a supply of fresh air is necessary for all human beings. The want of fresh air properly introduced into a building produces nausea, headache, and a sense of oppression, sleepiness, lassitude, loss of appetite, and, as a rule, inability to fix the attention. In healthy places of worship there should be no sleepers among the congregation. Anybody can realise some or most of these conditions, as they are felt often after having been in a stuffy theatre, church, or place of public meeting, and the effects are often intensified next morning. The principal point in all ventilation is to prevent stagnation of air.

Heat—pure heat—has practically nothing to do with the matter, although people are in the habit of referring to a building as being "too hot," whereas they really mean it is badly ventilated, the excess of carbonic acid having rendered the air impure.

A Turkish bath, although raised to a much higher temperature, has no bad results if properly ventilated; so that pure heat alone has nothing to do with bad ventilation.

Dr. Angus Smith's experiments in a leaden air-tight chamber are interesting in this respect as showing that although the air in rooms may be bad enough to put out candles and paraffin lamps, yet people may breathe it and endure it at the time, although they feel the bad effects afterwards.

A general knowledge of the *movement of air* may here be given, because it is on a misconception of the laws which govern movements of air that so many ventilation schemes are failures.

The forces tending to move the air in a room are the wind and the difference in temperature between the outside and the inside of the building. This is to say, that provided sufficient inlets and outlets are furnished the movement of air will be directly proportional to the force of the wind and the difference in temperature, which latter is, by-the-bye, the principal agent in natural ventilation.

The wind is, therefore, a strong factor, but unfortunately it acts principally in cold weather, when to open windows or ventilators without warming the air causes unbearable draughts. In warm weather with a warm breeze good ventilation may be obtained, but on a still day in hot weather with stagnant air, when its frequent change is required, ventilation is wanting. Wind is, moreover, such an uncertain agent that it is not advisable to make any ventilation scheme depend upon it. Natural principles of great importance are: that the specific gravity of cold air is greater than that of hot air, and that air when heated expands and rises. Air expands ·002, or $\frac{1}{500}$ of its bulk for every degree Fahrenheit it is heated, so that if the air be heated 50 degrees above the external air it will be increased in bulk $\frac{1}{10}$th, and is, therefore, lighter in proportion. Cold air when introduced into an apartment has a natural tendency to fall, unless properly warmed. As we shall show, this must be done if a ventilation scheme is to be of any use, otherwise in cold weather the inlets are soon closed because of the draught brought about by

the introduction of the cold air, because cold air being heavier than hot air a cold draught *descends* from what should be the *outlet* above. This outlet, as a rule, is closed in consequence, and so it is that schemes of ventilation depending on natural forces alone are doomed to failure. Air must be efficiently warmed in this climate for at least six months in the year.

Retracing our thoughts for a moment ; when cold air is introduced, it presses against the warmer air of the apartment and causes it to rise in the same way as water, when poured into a glass containing oil, causes the latter to rise to the top.

Next we come to an important consideration, viz., the *velocity* with which air moves. This depends on the difference in temperature between the internal and external air, and increases directly as the height of the extract flue.

It must, therefore, be remembered that any flue extracts a much larger amount in winter ; unless we know this velocity we cannot calculate for the required change of air.

Air is best extracted by something in the nature of a chimney or vertical shaft, which, in order to induce a current, should be heated. Extraction is also aided by the effect of the wind which blows across the top and gives a suction power to the shaft. Extraction flues should be as straight as possible, in order to prevent retardation by friction. A horizontal outlet often acts as an inlet, as such an opening will only extract when the wind blows on the opposite side of a building.

It has been calculated that a right angle bend detracts from the carrying power of any tube about 25 per cent., and it may, therefore, be laid down that ventilation tubes should be large, free from bends, smooth, and vertical. The deduction from velocity caused by friction must always be allowed for. The position of inlet and outlet has much to do with the movement of air currents. Some authorities consider that in winter time it is better to remove air near the floor level, if it is admitted warmed, as it diffuses and pervades the room more thoroughly. In summer, however, when the air is admitted in a cool state, it should be extracted at the top, otherwise it would fall towards the outlet without being distributed. This is the plan adopted in German schools.

2. Composition of Air.

Air consists mainly of oxygen and nitrogen in the following proportions by volume :—Oxygen, 21 per cent. ; and nitrogen, 79 per cent. ; and in addition there is always present a small proportion of carbonic acid gas, and often one or more of the following, viz., ammonia, ozone, or water vapour, argon, &c. In addition, suspended solid matter of mineral or organic particles ; and microbes are found under unfavourable conditions. According to Dr. Angus Smith, the purest sea or mountain air contains as much as 20·999 volumes per cent. of oxygen (or nearly 21, as stated above), but the worst air found in a mine contained only 18·27 per cent. In the air of towns the average limit is about 20·96 per cent., and in overcrowded halls the percentage may be as low as 20·65, so that the percentage must be kept within comparatively narrow limits. The amount of oxygen may be decreased in a variety of ways, such as combustion (gas, fires, candles, lamps), by respiration, by fog, organic effluvia, &c. ; on the other hand, it is increased by vegetation and by rain.

Ozone is a condensed form of oxygen, having a beneficial influence on the health. It is principally present near the sea and open country, and is rapidly destroyed by smoke and other impurities.

Oxygen we must have continually, as on it depend the maintenance of our bodily heat and of energy.

In town houses, in order to prevent impurities such as particles of soot and dust entering, air should be screened by causing it to pass through cotton wool or water. This may be effected by a filtering medium placed diagonally in a tube and presenting a surface about eight times the area of the inlet. This filtering medium should, of course, be changed frequently.

3. The Principal Impurities Found in Air are :—

a. Carbonic Acid Gas (CO_2).
b. Carbonic Oxide (CO).
c. Sulphuretted Hydrogen.
d. Marsh Gas.
e. Ammonia Compounds.
f. Suspended Matters of all Kinds.

a. Carbonic Acid (CO_2) is generally taken as the gauge of impurities in air ; as it is generally present in excess of other impurities.

It emanates from underground sources in the form of gas, or in solution in mineral waters, also from respiratory processes of animal life. It is increased by combustion, putrefaction, fermentation, and fog. It is diminished by vegetation, rain, and high winds. In designing a system of ventilation it is necessary to provide a sufficient change of air to keep the amount of carbonic acid below a certain percentage, as its presence and the consequent exclusion of oxygen tends to prevent the possibility of animal life.

The quantities in which this gas is found in the atmosphere varies from 0·3 parts per thousand in the finest mountain or sea air, to 1·0, 2·0, or even 3·0 in overcrowded rooms.

An average proportion in the open air is about 0·4 per thousand.

The late Sir Douglas Galton stated that 1·5 parts *per cent.* produce nausea, depression, and headache ; 2·5 per cent. extinguishes a candle ; 5 parts per cent. is fatal. The greatest amount of carbonic acid gas which may be present in air without harm is generally taken at ·6 per thousand cubic feet.

b. Carbonic Oxide (CO), is formed by the imperfect combustion of carbon ; and cast-iron stoves give it off in considerable quantities. Air containing 0·5 per cent., according to Galton, produces poisonous symptoms.

c. Sulphuretted hydrogen is formed in the air of sewers, in excavations, in marshes, and near gas works, &c.

d. Marsh gas is found in the air of marshes and also of coal mines, where the proportion may be sufficient to destroy life by the exclusion of oxygen. *Malaria* appears to arise from decaying moist vegetable matter in forests and marshes.

e. Ammonia compounds are derived principally from putrefaction and animal exhalations, and are injurious from the impurities which accompany them.

f. Suspended matter are of all kinds, such as dust formed of mineral particles, or organic matter of animal or vegetable origin. Stonemasons suffer from inhaling stone dust, house-painters from the dust of white lead ; and the dust of the Egyptian desert produces a kind of ophthalmia. Bronchitis and lung disease occur in factories by inhalations of sand, coal, &c., or particles of cotton or hemp. Indeed, it may be said generally that the air of towns is rendered impure chiefly from the quantity of suspended matters in the air.

OBITUARY.

M. David de Penanrun.—We regret to record the death, at the age of sixty-eight, of M. David de Penanrun, architect, of Paris, and an active and energetic member of the "Société Centrale des Architectes." He was originally a pupil of the Ecole des Beaux-Arts, and became "Inspecteur" under Baltard during the erection of the Halles Centrales, and also "Inspecteur des Bâtiments Civils" under the Government. He soon developed, however, a large private practice, and built many residences, in particular the Hôtel de Pomereu at Paris, various châteaux and villas, the Théâtre Taitbout, the Seminaire at Bièvre, &c. In 1876 he obtained the second premium in the competition for the Municipal Theatre at Cannes. M. de Penanrun was also an able writer on subjects connected with his profession, and was author especially of an important treatise under the title "Les Architectes dans leurs rapports avec les propriétaires, les entrepreneurs, et les tiers." He was one of the promoters of the "Caisse de Defense Mutuelle" among the French architects. His speeches at the architectural congresses, and his occasional communications to the columns of *L'Architecture*, were always characterised both by point and good sense and by the desire to maintain a high principle in the profession.

GENERAL BUILDING NEWS.

St. Stephen's Church, Newport, Yorkshire.—This church has just been consecrated by the Archbishop of York. The building is late Decorated in style, and consists of nave, aisles, transepts, chancel, and an aisle which is to be utilised for an organ. The door at the west end of the building is the main entrance of the church, and here, on each side, is a vestry, one for the use of the clergy, and the other for the choir. The east window of the chancel is a large five-light window of flamboyant character, and is filled with stained glass, the work of Messrs. Clayton & Bell. The building is lighted by hanging brass lamps, one in the centre of each arch, the chancel having a corona, executed by Messrs. Jones & Willis, of Birmingham. There is seating accommodation for some 320 people, and the church has been built of local bricks, with stone dressings, whilst the roof is covered with Staffordshire tiles. Adjoining the church is the vicarage. Both buildings have been carried out from the designs of Messrs. Brodrick, Lowther, & Walker, architects, of Hull. The contractor for the church was Mr. F. Pattison, of Ruskington, Lincoln, whilst Messrs. Kelsey & Son, of Goole, undertook the building of the vicarage.

St. Anne's New Church, Blackpool. — The foundation stone has just been laid of a new Anglican church at Blackpool. Messrs. Austin & Paley are the architects. The new church will occupy a corner position on South Drive. The portion now building will cost about 7,000*l.*, and will accommodate about 600 worshippers. The total cost will be 9,000*l.*, and the church, when completed, will hold 804 persons.

Church, Dean, Edinburgh.—It is proposed to erect a new parish church at Dean. Plans have been prepared by the architects, Messrs. Dunn & Findlay, and approved. The estimated cost of the church, to hold 935, with spire and hall, is 9,000*l.*

New Mission Church, Sparkbrook, Birmingham.—It is proposed to erect a new mission church for this locality at the corner of Golden Hillock and Walford roads. The plans for the church have been prepared by the diocesan surveyor (Mr. W. H. Lloyd). The building is designed to afford seating accommodation for about 700, and the cost is estimated at about 6,500*l.* The materials will be chiefly brick, with stone dressings. The site being short from west to east the church has been planned somewhat wider than usual, with the result that the seats are grouped within a short radius of the pulpit. The building will comprise a chancel 32 ft. by 24 ft., and a chancel aisle, organ-chamber, and vestry, a nave 86 ft. by 29 ft., a south aisle of 19 ft. width, and a north transept, two porches, and an additional exit from the transept.

Church, Kensal Rise.—A Baptist tabernacle is being erected at Kensal Rise. The new tabernacle, it is estimated, will cost, in addition to the site, about 4,000*l.*, and it has been designed by Mr. George Baines, Clement's Inn, Strand. Messrs. Battley & Sons have been entrusted with the building contract. Accommodation is to be provided for 900 people.

Primitive Methodist Chapel, Doncaster.—A Primitive Methodist chapel is in course of erection on the Bentley-road, Doncaster. Messrs. Athron & Beck are the architects. The building includes a school-chapel, 50 ft. by 30 ft., two class-rooms, and a tea-room, each 18 ft. by 13 ft., a store-room, and a heating-room. The front of the edifice will be of pressed bricks relieved by stone. Messrs. C. Sprakes & Son are the builders.

Restoration of Bradford Parish Church.—Bradford Parish Church has just been reopened after restoration. Altogether, an expenditure mounting up to nearly 10,000*l.* has been involved. A great change has been brought about ; but it is fair to the architects, Messrs. T. H. and F. Healey, of Bradford, to say that the alterations have been carried out in a truly conservative spirit, and without any sacrifice of the artistic or the historic. The old galleries of the north and south aisles have been removed, and the slender piers which had been cut into in order to support them have been strengthened, and thus extra support is given to the roof of the nave and aisles and the clearstory walls. By way of compensating for the accommodation sacrificed in the removal of the galleries, two new transepts, of the width of two bays, have been constructed. Most of the oak pews have been retained in the nave, but in the western end the old seats have been abolished, and, like the transepts, are fitted with chairs. New vestries to the north-east of the church have made it possible to again restore the Bolling Chapel on the south side—used as a clergy vestry—as part of the church proper. New choir stalls have been provided, and the chancel has been paved with marble in place of the old tiles. The roof of the chancel has been stripped of its slates, the defective wood cut away, and replaced by new, and the whole braced together, boarded, felted, and reslated. In the nave, panels of light-coloured oak have been inserted, whilst the aisle roofs on both sides are entirely new. The Flaxman monument, formerly in the chancel, is to be placed in the north transept. All the old memorials are preserved and placed in suitable positions. Several gifts of memorial windows have been made in connexion with the restoration, and, for artificial lighting, electricity has been introduced.—*Yorkshire Post.*

Wesleyan Methodist Church, Muswell Hill.—The new Wesleyan Methodist Church at Muswell Hill was dedicated recently. The architect for the new church was Mr. J. Gunton, of Finsbury House, E.C., and the builders were Messrs. Castle & Son, Clapton. The church is built of red brick and Bath stone dressings, with open roof covered with Broseley tiles. The present plan consists of nave, aisles, and large transept.

Primitive Methodist Church, Douglas, Isle of Man.—The foundation-stones of a new church in Buck's-road, Douglas, were laid on the 13th inst. The building will seat 900 persons, and the total cost will be about 6,200*l.* Mr. John Wills is the architect and Mr. William Kelly the contractor.

Tower, Long Melford Church, Suffolk.—The corner-stone of the reconstruction of the tower of the Church of the Holy Trinity, Long Melford, Suffolk, has just been laid. The architect is Mr. Bodley.

BOARD SCHOOL, UDDINGSTON, LANARK.—The school which has been erected by the Bothwell School Board at Muiredge, Uddingston, was opened on the 8th inst. The building is two stories in height, with a hall in the centre 59 ft. long and 26 ft. wide, lighted from the roof and by a stained-glass window in the east wall. The roof of this hall is of open timber construction. There are seven class-rooms on the ground floor and seven on the upper floor, with lavatories and cloak-room accommodation. The headmaster's room is on the ground floor. The building is heated by low-pressure hot water pipes and radiators. The plans for the building were prepared by Messrs. Bruce & Hay, architects, Glasgow; and the contractors for the various works were as follows:—Masonry, Messrs. Robert Aitkenhead & Sons, High Blantyre; wright work, Mr. William Miller, Uddingston; slating, Messrs. R. Morton & Sons, Uddingston; plumbing, Mr. Hugh Binning, Uddingston; plastering, Messrs. R. & W. Anderson, Bellshill; glazing, Messrs. C. & J. Malloch, Glasgow; concrete work, Messrs. Hamilton & Co., Glasgow; tiling, Messrs. Kean & Wardrop, Glasgow; heating, Messrs. James Cormack & Sons, Glasgow; painting, Messrs. W. & T. Cunningham, Uddingston; Gasfitting, Mr. James Hutcheson, Glasgow; railings and gates, Messrs. Donald Clerk & Son, Glasgow.

SCHOOL, HAMILTON, N.B.—On the 30th ult. the memorial stone was laid of a new school at Woodside. Mr. G. Paterson is the architect. The building is two stories in height, and is on the central hall principle. The school is to be fitted for 820 scholars, and the estimated cost is between 7,000*l.* and 8,000*l.*

NEW SCHOOL, STANNINGLEY.—A new school has been erected by the Pudsey School Board at Primrose Hill, Stanningley. The school, which has been erected from designs prepared by Mr. E. P. Peterson, architect, Bradford, is built on the central hall principle as a mixed department for 389 scholars. There are three class-rooms on the north and three on the east side of the central hall. The total cost of the buildings, including site, playground, fencing, fittings, and furniture, is about 5,000*l*

SCHOOL BUILDINGS, BANGOR.—The memorial stone of the building which the governors of the Bangor Friars' School have erected to replace the premises in the lower part of the town was laid on the 12th inst. Messrs. Douglas & Minshull, of Chester, are the architects, and Messrs. Jones, Hamilton, & Son, of Altrincham, the contractors.

SCHOOL, PRESTEIGN, RADNORSHIRE.—On the 15th inst. the Duke of Devonshire opened a new county school, established under the Welsh Intermediate Education Act, at Presteign, Radnorshire. The school is built upon the site of the old county gaol, the stone from which has been used in the new building. It provides accommodation for fifty-four students in two class-rooms and an assembly-hall. One of the class-rooms is separated from the assembly-hall by a movable partition. The technical side, which is cut off from the rest of the building, comprises a chemical laboratory 20 ft. by 18 ft., physical laboratory 26 ft. by 16 ft., and workshop 26 ft. by 16 ft. The architect is Mr. H. Teather, of Cardiff and Shrewsbury, and the contractor Mr. John Price, of Presteign.

SCHOOLS, WOODFORD, ESSEX.—The Woodford School Board have had a scheme for the erection of new schools in the George-lane district under consideration for some time, and plans have been prepared for 750 children, together with accommodation for a cookery centre. At a recent meeting of the Board it was decided to proceed with a block to accommodate 488 children and the cookery class room. The plans for this block have been approved by the Education Department, and tenders will shortly be invited. The architect is Mr. E. Tidman, Westminster.

COTTAGE HOSPITAL, LUTTERWORTH, LEICESTERSHIRE.—A cottage hospital is being erected at Lutterworth. The architects are Messrs. Townsend & Fordham, of Peterborough, and the contract has been let to Messrs. Linnel & Son, Rugby. The building will be of two stories, the frontage of 60 ft., facing north-west. The accommodation will comprise nurses' sitting-room, entrance hall, and offices, and two wards, these being placed at the back, with a southern aspect. There will also be an operating room, kitchen, scullery, pantry, and bath-room, besides nurses' bedrooms, tank-room, store-room, &c. A small isolated building will be set apart for a mortuary.

HALL, KINGLASSIE.—A hall, presented to the town by the late Mr. Alexander Mitchell, was opened on the 11th inst. The building was designed by Mr. Little, architect, Kircaldy. It is seated for 500 persons, and is provided with anterooms, retiring-rooms, and janitor's lodge.

HALL, MENSTRIE, N.B.—A hall in connexion with Menstrie Parish Church was opened on the 10th inst. Messrs. Dunn & Findlay, Edinburgh, were the architects. The hall is seated for about 400 people. The following were the contractors:—Masonry, Mr. J. Phillip, Tillicoultry; joinery, Mr. R. Cairns, Alloa; plastering, Mr. John Davie, Alloa; slating, Mr. J. Walker, Alva; heating, Messrs. M'Kenzie & Moncur, Edinburgh.

PARISH CHAMBERS, BLANTYRE, LANARKSHIRE.—At a meeting of Blantyre Parish Council on the 6th inst. it was decided to erect new parish chambers, the site fixed being the Council's own ground in Cemetery-walk. It is proposed to erect a Council-room, with a private or a public office, and also a registrar's office. Mr. Gavin Paterson, architect, Hamilton, was appointed to draw up the plans.

CO-OPERATIVE STORES, MORLEY.—The new central stores of the Morley Industrial Co-operative Society, which have been erected in Queen-street, at a cost of about 12,000*l.*, were opened on the 8th inst. The building is Classic in style, the architect being Mr. George B. Clégg, of Morley.

PROPOSED NEW MUNICIPAL BUILDINGS, MUSSELBURGH, EDINBURGH.—It is proposed to erect new municipal buildings for Musselburgh. On the left (facing south) are the Town Chamberlain's and Burgh Surveyor's offices on the ground floor, Council chamber on the first floor, and police accommodation above. A round tower provides access by a stair to the Town Hall behind and other rooms. On the right (facing the east) are police office, with court-room immediately above, and police constables' quarters on the top flat. The Town Hall will seat 1,000, while the Council chamber will be exactly double the size of the present one. The plans are by Mr. Will. Constable, architect, Musselburgh.

NEW MUSIC HALL, STRATFORD.—The new Empire Theatre of Varieties, Stratford, has been erected in the Broadway. The auditorium has a depth of 70 ft., with a clear width of 60 ft., and is constructed entirely without columns. On the ground floor are fauteuils, pit stalls, and pit. On the first tier is the grand circle, and on the second tier is the balcony, with the gallery set up above it, forming practically a three-circle house. The stage is 40 ft. deep and 70 ft. wide, with a height of 55 ft. A feature of the new building is a number of boxes at the rear of the grand circle. Raised promenades are provided on each level. The style of decoration throughout is Moorish, the prevailing colours being terra-cotta, gold, and blue. The building has been erected from the designs of Mr. W. G. R. Sprague.

MEAT MARKET, LEEDS.—The meat market which has been erected by the Corporation consists of twenty-six shops, each 17 ft. square. The shops are in two rows, with an avenue 12 ft wide between. At the far end are situated twelve offices, six at each end of a pitch-pine balcony, which is reached by a spiral staircase. A caretaker's house will be provided at the principal entrance, and over it will be erected a clock tower 70 ft. in height. The cost of the building, including the abattoirs (which have not yet been completed), will be about 30,000*l.* Messrs. W. Hanstock & Son are the architects.

ADDITIONS TO THE WEST OF ENGLAND EYE INFIRMARY, EXETER.—The foundation-stone has just been laid at the West of England Eye Infirmary of the new block of buildings which are to be erected to provide greater accommodation for staff and patients, in proximity to the present buildings. The plans have been prepared by Mr. A. Bramwell Thomas. A local firm of builders—Messrs. Stephens & Son—have contracted for the portion now to be proceeded with, at a price of 8,500*l.*

ST. JUDE'S VICARAGE, WOLVERHAMPTON.—The vicarage has been erected on a piece of land adjoining St. Jude's Church, Tettenhall-road, Wolverhampton, at a cost of 2,200*l.* The building is of ecclesiastical design. The walls are of red brick, with stone dressings, and the roofs are tiled. On the ground floor there are an entrance hall and staircase, dining-room, drawing-room, study, two kitchens, china pantry, larder, lavatory, back staircase, &c., and on the chamber floor there are seven bedrooms, bath-room, water-closet, housemaids' closet, &c., with hot and cold water circulation throughout. The contractor for the work was Mr. James Herbert, and the architects are Messrs. John Weller & Sons, of Wolverhampton

PROPOSED NEW TOWN HALL FOR BLACKBURN.—The report of Mr. A. N. Bromley, the architect selected by the Corporation, upon the proposal for a new town hall or improvements of the existing building, has been issued. Mr. Bromley says the existing structure is much too good to be discarded lightly, and he suggests that new police courts, a new assembly room, and other additions should be provided at a cost of 79,000*l.* A new town hall, with police-courts, offices, and assembly rooms, would cost 120,000*l.* Mr. Bromley suggests that a new clock tower should be placed at the junction of the present building with the proposed new assembly hall.

PROPOSED NEW ASSURANCE OFFICES, BRISTOL.—It is stated that the new offices for the Star Life Assurance Society, Tramways Centre, are to be commenced forthwith. The building will be from designs prepared by Mr. A. Blomfield Jackson, architect, of London, and the contract has been entrusted to Mr. A. J. Beaven, of Bedminster. The cost is stated to be about 15,000*l.*

CO-OPERATIVE BUILDINGS, BURTON-ON-TRENT.—The Burton-on-Trent Co-operative Society, Limited, are about to erect a range of shops, offices, concert-hall, and show-rooms in Byrkley-street. Mr. R. Stevenson, of Burton-on-Trent, is the architect, and the contract, which amounts to 7,380*l.*, has been secured by Messrs. Thos. Lowe & Sons, of the same town. The buildings are to be ready for use by October, 1900.

SANITARY AND ENGINEERING NEWS.

NEW LIGHT RAILWAY NEAR ABERDEEN.—A new brick factory, with workmen's cottages, &c., has been built at Tarbathie, five miles from Aberdeen, for the Seaton Brick and Tile Company, under the supervision of Mr. R. G. Wilson, architect, Aberdeen, Chairman of the Company; and the formation of a light railway extending from the works to near New Bridge of Don—a length of three and a quarter miles—will be commenced in a fortnight. Messrs. Walker & Duncan, Aberdeen, are engineers of the new line, which will be of 3 ft. gauge and have steel rails and steel sleepers. The railway will cost about 6,000*l.*

WATER SUPPLY, LOOE.—Mr. W. O. E. Mead King held a Local Government Board inquiry at Looe on the 11th inst., in regard to the application of the Looe Urban Council for consent to borrow 6,000*l.* for a new water supply for East and West Looe. Mr. S. Jenkin, engineer, produced plans of the eastern section of the scheme and Mr. J. Thomas, engineer, plans of the western section.

EDGBASTON AND HARBORNE SEWERAGE SCHEME.—At Birmingham Council House on the 12th inst., Major-General H. D. Crozier, R.E., held an inquiry for the Local Government Board relative to an application made by the Birmingham City Council for sanction to borrow 155,000*l.* for works of sewerage, and 1,100*l.* for public walks and pleasure grounds. The City Surveyor, Mr. J. Price, described, by the aid of drawings, the defects of the present system, and explained in detail the work it was proposed to carry out.

STAINED GLASS AND DECORATION.

MEMORIAL WINDOW, ST. CUTHBERT'S CHURCH, EDINBURGH.—A memorial window has just been completed in the south aisle of St. Cuthbert's Church. The window contains illustrations from the life of St. John. Messrs. A. Ballantine & Gardiner executed the work.

WINDOW, COGAN CHURCH, CARDIFF.—The centre light of the east window of Cogan Church, Cardiff, has just been filled with stained glass (subject "The Crucifixion"), presented by Mrs. S. A. Brain. The work has been executed by Messrs. Joseph Chater & Sons, of London, to the design of Mr. G. Ostrehan.

MEMORIAL WINDOW, ELY CHURCH, CARDIFF.—A memorial window in St. David's Church, Ely, was unveiled recently. The window consists of three lights, the subject being the Ascension, and the work has been executed by Mr. Samuel Evans, of West Smethwick, Birmingham. Messrs. James & Sweet-Escott, of Cardiff, were the architects.

WINDOW, KIRKSTALL.—A large stained-glass window has just been presented to St. Stephen's Church, Kirkstall, by Mr. Edmund Butler, of Leeds. The window, which is at the east end, is in three lights, and the subjects are, in the centre, "Christ in Majesty," on one side "St. Stephen," and on the other "St. Paul." The work has been carried out by Messrs. Joseph Chater & Sons, of London, to the designs of Mr. G. Ostrehan.

FOREIGN.

FRANCE.—M. Benjamin-Constant has been appointed a Member of the Conseil Supérieur des Beaux-Arts, in place of the late M. Lenepveu.——M. Gauquié (sculptor) and M. Guillaume (architect) have been commissioned to execute the monument to be erected, by public subscription, in memory of Henri Pille, the painter.——The bowl of a baptismal font of interesting design has been found in the vaults of the Church of Saint Sulpice, Paris. It is to be placed in the church.——The "Vieux Paris" Committee has demanded that the south-west tower of the ancient fortified enclosure of the Priory of Saint Martin des Champs should be officially classed as a "Monument Historique." The tower is still in good preservation, but is at present used as a store-house in connexion with a carpenter's shop. It is concealed behind a house in Rue Bailly, near the "Arts et Métiers" building.——M. Charles Normand, the architect, has discovered at the Quai Bourbon, north of Ile St. Louis, some ancient subterranean vaulted galleries which represent the last existing remains of the Paris sewers of the seventeenth century.——A rich inhabitant of Mirecourt has left to that town 500,000 francs for the erection of a church.——The death is announced, at the age of fifty-four, of M. Léon Charles Louis Avenet, a former pupil of the Ecole des Beaux-Arts and of M. Vaudremer, who quitted architecture to take up the art of glass-painting, in which he had considerable success.——M. Alfred Rubé, the oldest scenic painter in Paris, has died at the age of eighty-four. For many years he had taken part in the decoration of nearly all the Paris theatres. He was the last surviving pupil of Ciceri, the celebrated decorator of the "Romantic" Period. Among his numerous works may be mentioned the scenery of the cemetery scene in Ambroise Thomas's "Hamlet," and an admirable night effect painted for a piece at the Comédie Française, "Jean de Thommery." He designed the curtain of the Opera House, and his last work was that for the Opera Comique. He had talents enough as a draughtsman

and colourist to have gained eminence in the wider field of the art of painting, but seems to have preferred the large scale of work for scenic decorations. The scenes which were sent out from his atelier are innumerable, and his name is closely connected with French dramatic art of his period. M. Rubé was a Chevalier of the Legion of Honour.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The business of the late Mr. E. Egan, architect and surveyor, of Loughton, Essex, and 39, Lombard-street, London, will be carried on by Mr. Horace White (who was chief assistant for several years to Mr. Egan) in partnership with the widow, under the style of Egan & White.——Mr. Harry G. Assiter, surveyor, has removed his offices from 5, St. Martin's-place, Trafalgar-square, to 19, Old Queen-street, Westminster.

THE UTILITY OF WOOD-FLOUR.—The *Canadian Gazette* publishes some interesting information from an official report regarding the Canadian wood-flour industry. Wood-flour or "wood-meal" is used in the manufacture of a certain kind of linoleum known as "inlaid," and also as an absorbent for nitro-glycerine. It is estimated that about 1,200 tons of wood-flour are used per annum in the United Kingdom for the manufacture of linoleum, while the total consumption for the manufacture of explosives is about 700 tons. The price of wood-flour for making linoleum varies from about 3*l.* to 3*l.* 10s. per ton, and for absorbing nitro-glycerine from 4*l.* to 4*l.* 10s. per ton. For the latter purpose the flour must be made from soft wood, and must be prepared with great care. For linoleum manufacture the wood-flour must be finely ground, white in colour, and of light weight.

OPEN SPACES, DOLLIS HILL.—We recently adverted to the proposal to purchase the late Lord Aberdeen's estate at Dollis Hill as a public recreation ground. It is stated that the Willesden District Council have the option of buying, before the end of April current, the whole property, 98 acres, for 50,000*l.* The Council agree to raise 30,000*l.*, and the Middlesex County Council undertake, we gather, to contribute 12,500*l.* All Souls College, Oxford, and the Ecclesiastical Commissioners, both of them being land-holders to a large extent in the neighbourhood, have been asked to subscribe—the Commissioners offer, in response, to lend the District Council a sum of 5,000*l.* at 2 per cent. interest. As the land lies outside the London boundary the London County Council and the Paddington Vestry express their inability to contribute to the purchase.

THE IMPROVEMENT OF CHEAPSIDE.—A beginning has been made with the project of widening the roadway at the west end of Cheapside from 45 ft. to 65 ft. by the demolition of the houses at the end of Paternoster-row and the corner of St. Paul's Churchyard, to be followed by the removal of the houses at the corner of Newgate-street, where an additional width of 25 ft. will be gained. The scheme will be carried out at a total expense of 155,950*l.*, the net cost being shared equally by the Corporation and the London County Council. One effect is already apparent, in the fine view which one now obtains of the east end and north side of St. Paul's.

THE NEW GOVERNMENT BUILDINGS.—In the House of Commons on the 13th inst. Sir J. Leng asked the First Commissioner of Works whether it was proposed to make the new Government buildings in Whitehall, Parliament-street, South Kensington, and the Patent Office as far as possible fireproof; and whether tests would be made as to which was the best system, or would it be left to the architects employed to decide what system of fireproofing should be adopted.—Mr. Akers-Douglas: The answer to the first paragraph of the hon. member's question is in the affirmative; the architects, in conjunction with Sir John Taylor, will be instructed to consider what system or systems are best adapted to render the various buildings fireproof.

ELECTRIC LIGHTING, BOOTLE.—The electricity supply station in Pine Grove, Bootle, has just been completed. The scheme has been designed by Mr. Thomas L. Miller, Consulting Engineer to the Bootle Council, under whose superintendence the work has been carried out. Mr. O. F. Francis acted as clerk of works. The buildings were erected by Messrs. L. Parker & Co., Wolverhampton, from plans prepared by Mr. J. A. Crowther, the Borough Engineer. Mr. F. A. Robins was resident engineer.

JERRY BUILDING, SHEFFIELD.—At a recent meeting of the Sheffield City Council, Mr. Howell, alluding to the approval of plans for the erection of certain new houses in Oakbrook-road, hoped the Chairman of the Committee would see that the houses were properly built in accordance with the plans. In Hangingwater-road, close by, there was a very serious example of jerry building. The Council ought to have more building inspectors. Some of the work he referred to had been taken down and rebuilt, and more would have to be. The building of the property was disgraceful. He saw the gable end of one house bulging out, but by some hydraulic means or other it was got in again. Instead of decent bricks, brick ends, broken bricks, or anything else were used for the insides. Either the by-laws were not sufficient, or somebody was not doing his duty. It was a disgrace to Sheffield that houses of that sort should be built.—Mr. Nowill said during 1898 plans were approved for 3,560 new houses, as against 1,906 in 1896, and suggested the advisability of engaging additional inspectors.—Alderman Brittain agreed with Mr. Howell, and thought it desirable that, in their next application to Parliament, the Corporation should ask for power to deal with those houses which were run up at the smallest possible cost, and were dangerous, not only to the health, but to the life and limb of people.—Mr. Hobson thought that the by-laws gave the Council power to do much more than they did at present, and that they had not half enough inspectors.—Mr. Uttley said the building inspectors did their duty ably, but they got no encouragement in it. When a builder was brought before the magistrates a few weeks ago he was fined the enormous sum of 3s. 6d. There was every encouragement to jerry building to-day in Sheffield. He wished to defend the building inspectors, who were humbugged and hampered until life was almost unbearable. They often found, after visiting a new building, that if they went back an hour later inferior material was being used. He was afraid the present building boom would not continue, and that if the staff of inspectors was increased it would have to be reduced in a year or two.—The Chairman of the Highway Committee said the general answer to all these questions was that the department was very much understaffed in the number of building inspectors. He was glad that the remarks in the Council had been made, as they would strengthen the hands of the committee in dealing with those and with other matters. Two building inspectors under normal circumstances were not sufficient for a city of the size of Sheffield, and under the abnormal circumstances of the last few years that number was totally inadequate. Builders required a lot of watching. He thought if the Committee came before the Council proposing the enlargement of the staff, they would have the support of the Council.

ANCIENT CROSSES OF LANCASHIRE.—At the recent monthly meeting of the Lancashire and Cheshire Antiquarian Society, held in the library of Chetham's Hospital, Mr. Henry Taylor read a paper upon "The Ancient Crosses of the Hundred of Leyland." The paper was illustrated by a map on which were shown the sites of fifty crosses and the positions of the fifteen churches and chapels of the pre-Reformation foundation. Another map showed the sites of the fifteen religious houses which were established mainly on the western half of the county of Lancaster, between the years 1087 and 1319, and to whose influence the existence of so many crosses may be attributed. Amongst the drawings, sketches, and photographs which he exhibited were plans of the sites of Penwortham Priory, its crosses and holy wells; a drawing of the Preston market cross as it existed in the year 1715, the Leyland village cross, the Standish market cross with stocks and well, and the remains of the Croston market cross and well. There were also a series of sketches of the remarkable monumental slabs in Leyland churchyard; the remains of the celebrated Mab's cross, Wigan, and of the market cross, Chorley; a curious ancient cross near Walton-le-dale; the pedestal of the Pilgrim's Cross, Holcombe Moor; the pre-Norman churchyard cross, Winwick; St. Helen's wishing well, Brindle; and Gradwell's Farm cross, near Croston. In the course of his remarks Mr. Taylor pointed out that light has been thrown on the history of many of the crosses whose remains are to be found scattered over the Hundred, by the "Chartulary of Cockersand Abbey," recently published by the Chetham Society. Several of these deeds, whereby land was given by private individuals to Cockersand Abbey, dating in some cases from the early part of the thirteenth century, define these lands by the planting of crosses, whose pedestals are still to be seen. Instances occur at Shevington and Langtree, Standish, at Fairhurst near Parbold, and elsewhere. Robin Hood's Well and Cross, West Croston, were then described, and the Dob and Hob crosses also in that locality. Mr. Taylor also described the contests which took place at the beginning of this century between the villagers of Sollom and Tarleton for the pedestals of their crosses.—*Manchester City News.*

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—The Twenty-seventh Voluntary Pass Examination of candidates for municipal surveyorships, carried out by this Association, was held at the Institution of Civil Engineers, Westminster, on Friday and Saturday, the 14th and 15th inst. The written portion of the examination occupied the first day. The greater portion of the second day was devoted to the *viva voce* test of the twenty-eight candidates who presented themselves for examination. The examiners were:—(1) for Engineering, Mr. William Weaver, M.Inst. C.E.; (2) for Building Construction, Mr. J. Lobley, M. Inst.C.E.; (3) for Sanitary Science, Mr. J. Lemon, M.Inst.C.E.; (4) for Municipal Law, Mr. J. T. Eayrs, M.Inst.C.E. Mr. Lemon was the superintending examiner.

ELECTRIC SHOP-WINDOW LANTERN.—The Edison and Swan Electric Light Company send an illustration and description of the "Rex" outside shop-window lantern. This is a globe lantern containing incandescent lights. The inner half of the globe, towards the shop window, is of clear glass, the outer half of opal glass, which aids in reflecting the light into the shop window, and also affords on its outer side a surface for the name of the shop, or other announcement.

BRITISH ARCHÆOLOGICAL ASSOCIATION CONGRESS.—It is stated that the Congress of this Association will be held in Buxton from July 17 to 22 next. Mr. Charles Lynam, architect, Stoke-upon-Trent, has made the preliminary arrangements. Mr. W. R. Bryden, architect, Buxton, will act as local hon. secretary.

ROYAL ARCHÆOLOGICAL INSTITUTE.—The Council of the Royal Archæological Society have decided to hold the annual meeting at Ipswich this year, from July 25 to August 1. A local committee has been appointed by the Suffolk Institute of Archæology, in conjunction with the Ipswich Scientific Society.

FORMATION OF A BRADFORD BUILDERS' FEDERATION.—A meeting was held at the Bradford Building Trades and Stone Exchange on the 12th inst. for the purpose of discussing the question of forming an employers' federation for the Bradford district. Rules of the Leeds and other federations were laid before the meeting, and the proposition having been favourably commented upon by the representatives of each trade concerned it was decided to form such a federation.

THE FIRE AT HYDE PARK COURT.—With regard to the fire in Hyde Park Court we have obtained some information from the architect, Mr. Francis Hooper. He thinks that the fire originated in the service room, probably on the ninth floor, though the first signs of it were seen on the basement and ground floor. These were extinguished by the hydrants which are on each floor. It was then discovered that the fire was raging on the ninth and tenth floors, and it is suggested that fragments of burning material must have fallen down the shaft of the service lift and caused the smaller fires on the basement and second floor. The fire-engines were sent for, when it was discovered that the fire was at the top of the building. With regard to the plan of the building, it consists of two separate blocks, one facing the park and the other Knightsbridge-road. These blocks converge slightly towards each other eastward, and at the west are 40 ft. apart. They are connected centrally by a bridge on each floor, on which are the passenger lifts; between these and the service lift is the stone main wall of the Knightsbridge front block. A special feature in the construction of the building is the outside circular staircase situated on the Park front, passing through the open loggia on each floor; this staircase was used by all who thought fit. The servant maids, whose dormitories are on the top floor, appear to have been terrified by the smoke, and did not venture to cross the building to the staircase. Both the passenger lifts and the staircases are intact. The fire was confined to the timber roof above the large storage tanks in the Knightsbridge front, otherwise the structure of the building is uninjured. The fitting and joiners work on the two top floors of the central portion are all that have suffered, except by water.

CAPITAL AND LABOUR.

STATE OF THE BUILDING TRADES IN MARCH.—According to the *Labour Gazette* employment in the building trades during March continued good though the plasterers have been affected by a dispute. The percentage of unemployed union members among carpenters and plumbers at the end of the month was 1·6 compared with 1·5 in February. The percentage for March, 1898, was also 1·6. During the month there were eighteen disputes, chiefly in regard to wages, affecting 5,724 workmen. Of these disputes eight were in England and Wales and ten in Scotland.

BUILDING TRADE DISPUTE AT SUNDERLAND.—The Sunderland Branch of the Northern Counties Federation of Master Builders issued on the 13th inst. a notice to the labourers employed in the building and kindred trades in Sunderland and district, to the effect that it has been reported to them that a large majority of the labourers employed by them are not desirous of leaving their work in the event of some of their number striking. The manifesto then goes on to say that the union men having refused to meet the masters to hear the reasons which induced them unanimously to refuse the men's demands, notice was given that the masters would support all labourers remaining at work, as far as they lawfully could, both during the strike and afterwards. The men have been earning 6½d. per hour, and are seeking an advance of ½d. per hour. The master builders have decided to give two months' notice to the bricklayers' labourers of a reduction from 6½d. to 6d. per hour.

GLASGOW AND EDINBURGH JOINERS.—At Glasgow, on the 14th inst., the local master joiners agreed to refuse the workmen's demand for 10d. an hour. It is believed that the men will in consequence strike. A mass meeting of the operative joiners of Edinburgh and Leith was held at Edinburgh the same day to consider the masters' refusal of their demand for an advance in wages from 9d. to 9½d. per hour. The meeting refused to accept the masters' offer of arbitration, and, after a long discussion, it was decided to strike.

THE LABOURERS' STRIKE, LEICESTER AND LOUGHBOROUGH.—The Secretary of the Midland section of the National Building Trade Employers' Federa-

tion has informed the Secretary of the Leicester branch of the Labourers' Union, that the Leicester and Loughborough employers have decided not to grant any increase in wages to the bricklayers' labourers, and that if the men continued to hold out against the unanimous decision of the employers in those towns, the employers would have to consider the advisability of extending the stoppage to all labourers within the federation area. The men have, nevertheless, confirmed their demand for an additional ½d. per hour, and 140 members of the union are already getting it. The bricklayers and some carpenters are affected by the strike. It is believed that the dispute would be settled but for the lock-out of plasterers, which involved the stoppage of labourers sooner or later. The labourers have offered to submit their demand to arbitration by the Board of Trade, and contend that as the bricklayers and carpenters have had an advance recently, they are also entitled to consideration.—*Morning Advertiser.*

THE ARBROATH BUILDING TRADE.—At a meeting of the Arbroath joiners on strike, held on the 12th inst., it was reported that the federated masters, with one exception, had signed the by-laws, and the men agreed to resume work. The wages of the men have been increased from 7½d. to 8d. per hour as the result of the strike. The operative slaters have, following the lead of other tradesmen in the town, lodged an application for an increase of ½d. per hour to their wages. The master slaters, along with the Committee of the Builders' Federation, met the other night, and after consideration it was resolved to decline to grant the advance.

TRADE DISPUTE AT HUCKNALL, NOTTS.—A small trade dispute is now operating at Hucknall in connection with the local branch of the Amalgamated Society of Carpenters and Joiners, who last October gave their employers notice that from April 1 they would require to be paid at the rate of 8½d. per hour instead of 8d. as heretofore. Several employers have granted the advance, but a few men, who have been refused their demands, have been called out by the Society.

DUNDEE JOINERS' WAGES.—The Dundee joiners have received an advance of ½d. per hour, making the total wage 9d. per hour. Application for an advance was made in January, to come into force on April 10, and the state of trade warranting such a step, the employers conceded the increase, subject to certain conditions.

THREATENED PAINTERS' STRIKE AT BURNLEY, LANCASHIRE.—A meeting of the Burnley and District Branch of the National Association of Master House Painters was held on the 13th inst., when the demands of the men regarding an increase of wages and alteration of rules appertaining to overtime and boundaries were considered. It was decided to reject the present demand. Should an arrangement not be come to the whole of the painters in Burnley and district will cease work on May 1.

BUILDING TRADE DISPUTE, SCARBOROUGH.—At a meeting of the Scarborough Master Builders' Association on the 17th inst., regret was expressed that the locked-out labourers had refused to accede to the masters' request and work with non-unionist men. It was accordingly agreed to fill up their places. The lock-out, we understand, was brought about by a dozen unionist labourers going on strike because one man employed was a non-unionist. The masters then locked out the unionist labourers, numbering about 300.

THE STRIKE AT FELIXSTOWE.—The strike amongst the bricklayers in the Felixstowe district, which commenced with the first of the month, bids fair to continue, neither side being at all inclined to give way. The masters regard the demand of an increase of one penny upon the 7d. per hour now paid as exorbitant.

LEGAL.

THE PLASTERERS' DISPUTE.

AT the South-Western Police-court a few days ago, B. Corke, plasterer, was summoned before Mr. Denman for committing a violent assault on George Stillwell, plasterer's labourer, employed by Veronese, Limited, fibrous plaster manufacturers, Fulham.

Mr. Raven prosecuted on behalf of the London Master Builders' Association, and stated that the case arose out of the plasterers' lock-out. The defendant was not employed by Veronese, Limited, but apparently he nursed some grievance against the complainant, and, meeting him on the evening of the 1st inst. in Lower Richmond-road, Putney, muttered something, and then, without any warning or provocation, dealt him a violent blow between the eyes, knocking him to the ground. Stillwell's nose was broken, his eyes were blackened, and one of his teeth was knocked out. He injured his knee in the fall, and rheumatic gout as a consequence supervened.

After hearing the evidence, the magistrate said the case assumed a different aspect from what it wore at the beginning, and perhaps the defendant did receive some provocation. At the same time, the assault was a serious one, and he would be fined 5*l.*, with the alternative of one month's hard labour in default, besides being bound over in 10*l.* to keep the peace for twelve months.

CASE UNDER THE WORKMEN'S COMPENSATION ACT.

ON Thursday of last week, at Chorley County Court, Judge Coventry had before him a claim, under the Workmen's Compensation Act, of much interest to builders. The application was by Jane Bibby, widow of the late Peter Bibby, to his Honour as arbitrator under the Act, to award the sum of 161*l.* 16*s.* as compensation for the death of her husband, which resulted from injuries received while following his employment as foreman carter for Robert Brownley, builder, Chorley. Mr. Berry appeared for the applicant, and the respondent was represented by Mr. Byrne (instructed by Mr. Kevill). Mr. Berry, at the outset, said Mr. Brownley was a builder, carrying on business in a large way, and had a joiner's shop in Railway-street, Chorley, which was a workshop within the meaning of the Act, as steam was used there. On September 7 Bibby, the husband of the applicant, was taking a load of timber to the Infectious Diseases Hospital at Heath Charnock, which was in course of erection. Whilst on the way he stopped the horse to wind and went for a few moments into a public-house just at hand. As he was coming out the horse started off and rushed on to the parapet. He endeavoured to stop it, but unfortunately he got between the horse and a palisaded wall and was caught by the wheel and was severely mangled. He was conveyed to the Cottage Hospital but died the next day, leaving a widow and four children. Mr. Brownley rendered the widow pecuniary assistance by giving her 5*l.* and allowing her for a time to live rent free in one of his houses, but ceased on the action being commenced. Mr. Berry said that, although the accident did not actually take place in or about the workshop, it arose out of the man's employment, and his Honour had in a former case expressed the view that so long as the accident was in the course of the employment the employer was liable no matter where it was. His Honour said that was the view he had taken, but it would have to be shown that Bibby was employed by the respondent, and that the respondent's place was a factory within the meaning of the Act. How could a carter be classed as a workman for whom the Act was intended? Mr. Berry said he would have to load his timber in the place where the steam power was used. Mr. Byrne said his contentions were:—(1) That the place was not a factory at all within the meaning of the Act. (2) The accident did not occur in or about a factory. The whole duty of deceased was to look after the stables and carts and to superintend the other carters. (3) They also alleged that the accident was due to the negligence of the deceased. The Judge thought it would be best to hear the facts, and in the evidence which was given it appeared that the backband had broken at the time of the accident. It was an old one, but deceased had had a new one given him, but had not used it. His Honour said the Act stated that the employment was to be in or about a factory. Supposing a stable was on the premises of a factory and a man was employed at it, surely it could not be contended that that was not employment about a factory. Mr. Byrne contended that the injury must occur in physical nearness to the factory, and in support of this he cited two cases which had been decided recently on appeal by the same Judge. In one case it was held that where a workman in a factory who was injured whilst unloading a cart at the gates of the factory was entitled to compensation, in another case it was held that a man employed at a corn-mill who was injured whilst delivering sacks of flour one and a half miles away was not entitled. In both cases, said Mr. Byrne, it was laid down that the injury must be received in employment which was in close propinquity to a factory. The accident in the present case was half a mile away. If his Honour held that it was a factory within the meaning of the Act, and therefore the applicant was entitled to compensation, his (Mr. Byrne's) last point was that Bibby had brought about his fatal injury by his own fault in using an old backband when a new one had been provided for him. In reply, Mr. Berry said that according to the Act respondent was liable to pay compensation if Bibby was injured in the course of his employment, no matter where he was. As to the question of respondent's works being a factory within the meaning of the Act, he said it was necessary that Mr. Brownley should have carters in connexion with his saw mill, to carry timber to and from it. It was obvious that if the Act was not intended to apply to employment at a distance from a factory, the words "in the course of his employment" would not have been inserted in the Act. His Honour, in giving his decision, dealt first with the contention that respondent was not liable, because Bibby, by his neglect, had brought the accident on himself. It appeared to him that by using an old chain while he had a new one in his possession, Bibby did an act which probably cost him his life. It had been stated that he kept the new chain for May Day, but he could not say such an act amounted to "serious and wilful misconduct," which was necessary under the Act before a person could be disentitled to compensation for an injury. As regarded the cases cited by Mr. Byrne, his own view was that if the injury happened in the course of a man's employment in connexion with a factory, it did not matter where he was at the time of the accident. He had, however, to confess that the Court of Appeal had given decisions contrary to that view, and he was bound to follow those judgments. This being so, he must say with some reluctance, he found that deceased was not at the time of the accident in employment about respondent's factory, and he had therefore to make his award in favour of Mr. Brownley.

INTERFERENCE WITH A PARTY WALL AT ALDGATE

THE case of Harris *v.* The London and North-Western Railway Company came before Mr. Justice Byrne in the Chancery Division on the 14th inst.

Mr. Levett, Q.C., said that this was a motion on behalf of the plaintiff to restrain the defendant company from interfering with the plaintiff's party wall at No. 58, Mansell-street, Aldgate, except under the terms of the London Building Act. He understood that his learned friend Mr. Clare appeared for the defendants, and would give him an undertaking until the trial, without prejudice to any question, not to interfere with the party wall except under the terms of the London Building Act. Upon this undertaking the motion stood till the trial.

ACTION AGAINST CONTRACTORS.

THE case of Ffolliott *v.* Pearson & Son, Limited, came before Mr. Justice Phillimore and a common jury on the 17th inst., it being an action brought by the plaintiff, Mr. T. L. Ffolliott, the freeholder of No. 27, East Cliff, Dover, for damages for an alleged nuisance. The defendants, the contractors for the new Admiralty Pier at Dover, pleaded in defence statutory authority. It appeared that the defendants in the course of their work had established a store-yard on the road in front of the plaintiff's house and had also taken possession of the castle jetty opposite the plaintiff's house, and had erected steam cranes and other steam-engines there. The plaintiff complained of a nuisance arising from noise, smoke, and coal-dust.

After some evidence had been given the case was settled, the defendants buying the plaintiff's house. The terms of the settlement did not transpire.

Mr. H. F. Dickens, Q.C., and Mr. G. H. Condy appeared for the plaintiff; and Mr. Scott Fox, Q.C. and Mr. C. G. Jones for the defendants.

PROTECTING BUILDINGS AGAINST FIRE.

AT the Southwark Police-court, on Tuesday, Messrs. Peek, Frean, & Co., Limited, biscuit makers, were summoned by the London County Council for neglecting to obey a statutory notice to provide means of escape in case of fire at a packing-case manufactory owned by them, and occupied by Messrs. Lloyd & Co., at Mill-street, Dockhead.

Mr. Chilvers prosecuted, and showed that the defendants agreed in July, 1898, to do the work, but up to the present had done nothing. The factory was full of inflammable materials, it employed 200 or 300 men, and the only exit from the third floor was a steep ladder of bad construction. There had been two fires since the first notice was served.

Mr. Moresby, on behalf of the defendants, undertook that the work should be done forthwith.

The magistrate said the owners could not transfer the blame to the occupiers. They were liable on the summons to a penalty of 58*l.* for fifty-eight days, but he should only order them to pay 20*l.* and 5*l.* 5*s.* costs. If the work were not quickly done he hoped they would be summoned again.

MEETINGS.

FRIDAY, APRIL 21.

Architectural Association.—Annual Soirée, St. George's Hall, Langham-place, W. A musical play will be performed, entitled: "The Druids' Elect: An Episode of the Ancient Britons." 8 p.m.

Institution of Civil Engineers.—The seventh James Forrest" Lecture, to be delivered by Professor J. A. Ewing: "Magnetism." 4 p.m.

SATURDAY, APRIL 22.

St. Paul's Ecclesiological Society.—Visit to the following City churches, conducted by Mr. Philip Norman, F.S.A.:—St. Vedast, Foster-lane, at the back of the General Post Office, at 3 p.m.; St. Anne and St. Agnes, Gresham-street, at 4 p.m.

Sanitary Institute (Demonstration for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

Edinburgh Architectural Association.—Visit to Drum House.

MONDAY, APRIL 24.

Sanitary Institute (Lectures for Sanitary Officers).—Professor Henry Robinson on "Sewerage and Sewage Disposal." 8 p.m.

TUESDAY, APRIL 25.

Institution of Civil Engineers.—Annual general meeting of corporate members only, to receive the Report of the Council, and to elect the Council and Auditors for the ensuing year. 8 p.m.

WEDNESDAY, APRIL 26.

Surveyors' Institution.—Country meeting at Bristol, to be held in the reception room of the Council House, at

11 a.m. The following papers will be read and discussed: —(1) "Bristol," by Mr. William Sturge (Past President). (2) "The Railways and the Farmers," by Mr. W. M. Acworth (Barrister-at-Law). (3) "The Proposed Provision of Workmen's Houses by Loans from Local Authorities," by Mr. Howard Martin (Fellow). The members will dine together at the Grand Hotel, Broad-street, Bristol, in the evening, at 6.30 p.m. The following day will be devoted to excursions to (1) Places of interest in Bristol and its vicinity. (2) Tintern Abbey and Chepstow Castle. (3) Wells and Glastonbury.

Liverpool Engineering Society. — Annual General Meeting. Paper by Mr. M. Treleavan Reade. 8 p.m.

Edinburgh Architectural Society.—Mr. F. W. Deas on "Churches in South-Eastern Italy." 8 p.m.

THURSDAY, APRIL 27.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. Charles Jones on "Scavenging, Disposal of House Refuse." 8 p.m.

Royal Institution.—Professor Dewar on "The Atmosphere." III. 3 p.m.

Society for the Encouragement of the Fine Arts.—Mr. R. Cameron, M.P., on "The Growth of Art in our Public Schools." 8 p.m.

Institution of Mechanical Engineers. — Ordinary General Meeting. Address by the President, Sir W. H. White, 7.30 p.m.

Institution of Electrical Engineers.—(1) Continuation of discussion of paper by Messrs. W. Duddell and E. W. Marchant on "Experiments on Alternate Current Arcs by Aid of Oscillographs." (2) Paper by Mr. J. Elton Young on "Capacity Measurements of Long Submarine Cables." 8 p.m.

FRIDAY, APRIL 28.

Architectural Association.—Mr. F. W. Macey on "Specifications." 7.30 p.m.

Royal Institution.—Professor C. A. Carus Wilson on "Some features of the Electric Induction Motor." 9 p.m.

Institution of Mechanical Engineers.—Ordinary General Meeting (concluded). Paper by Mr. H. G. V. Oldham. 7.30 p.m.

SATURDAY, APRIL 29.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage Outfall Works, Barking. 3 p.m.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until June 12.

[1898] 7,903, Soulé, and 7,961, Wilson, Electrical Switches. 9,265, Levey & O'Brien, Artificial Stone, Tiles, &c. 9,485, Scott, Scott, & Wilson, Implement for Applying Paint and Similar Substances. 9,669 and 9,670, Westman, Rotary Milling Cutters for the Grooving and Tongueing of Boards, &c., and Machine for Cutting Long Shavings. 9,674, Melhuish, Guthrie, & Hughes, Acetylene Lamps. 10,175, Lumsden, Wrenches for Pipes, &c. 11,400, Ellin, Pincers, Nippers, Hand Vices, and Similar Tools. 11,561, Sugden, Incandescent Gas Lighting. 12,022, Rigby, Generation of Acetylene Gas. 12,439, O'Conor, Dredging Apparatus. 12,448, A. Barraclough & Co. and Others, Lead and Other Piping, and means for Making Joints therein. 12,514, Pope & Rayner, Automatical Alarm for Lifts. 12,657, Petterson, Wickless Burners for Petroleum Stoves, &c. 12,686, Grafton, Cranes. 12,710, Lynde, Hinged Self-closing Bib-cock or Tap. 12,839-41, Siemens & Halske, A.G., Electrical Glow-lamps and Fittings. 13,991, Brecknell, Steel-yards. 14,524, Showell, Retaining Mechanism for Sliding Rods for Fan-light Openers and similar purposes. 15,090, Allen, Waste Water and other Closets. 17,590, Rowe, Fastener for Windows, Cupboards, &c. 17,883, Booker, Arc-lamps. 18,907, Blanckenhorn, Electrical Switch Device for the Temporary Lighting of Staircases, Floors, Cellars, &c., also for indicating the Heating of Shafts and Bearings, and for Fire-alarms. 21,253, Wharldall, Ladders and Step-ladders. 22,515, Michaelsen, Locks. 23,091, Barnes, Casement-stays. [1899] 604, Rulon & Keen, Incandescent Vapour Lamps. 1,001, Porter, Electrical Heaters. 2,289, Zeltner-Dietz, Method of Marking Out the String-boards of Staircases. 2,489, Mauser, Method of Making Bars, Fences, Latticed Work, Fillings, Ornamentations, &c., of suitable material in Strips without Waste. 2,565, Meier & Obacht, Device for Painting, Graining, or Applying Patterns or Designs. 2,574, Moutte, Movable Furnace Grates. 3,295, Raymond & Raymond, Brick and Tile Presses. 3,364, Rogers, Attachment for Street Gulleys to enable them to take off Storm Water. 3,474, Rowntree, Door-operating Mechanism, chiefly for use for lifts. 4,133, Konrad, Preservation and Fireproofing of Wood, &c. 4,273, Hill, Window Sash Fasteners. 4,307, Robertson, Self-acting Window Lock. 4,638, Enock & Enock, Turbines. 4,766, Niederländer, Sliding Windows. 4,817, Bronw, Implement for Measuring Limited Lengths and Automatically Calculating certain Fractional Parts thereof. 4,874, Whiteley, Sliding, Swivelling, or Folding Partitions, Doors, Windows, &c. 4,878, Wilkinson, Case for Electrical Transformer Connexions, also applicable to Street Electrical Light Standards. 5,119, McLaren & Carrod, Purifying and Softening Water.

ABSTRACTS OF PATENTED INVENTIONS.

28,968.—ROOFS: *W. J. Woods.*—The roof is ridge-shaped at the centre, and diamond-shaped at each corner of the building, the latter portion being constructed of rafters, which extend between the lower bars or plates and a central diagonal rafter or bar, which may reach along the frame's entire, or partial, length, ordinary roofing shingles are attached to purlins nailed to the frame—it is claimed that the method of roofing presents a novel appearance, affording increased facilities for ornament, and for dormer or bay windows at the sides and ends of the building.

29,001.—PARTITIONS: *W. Browning.*—They are constructed of wood or corrugated iron, and have a separate vertical portion held by links upon a base, the lower edge of the vertical part can be raised over the batten of the base, the latter being then folded flat against the former.

29,020.—BRICKS AND BUILDING BLOCKS: *F. S. Smith.* The undersides and ends of the bricks have grooves or recesses, which receive projections and wedge-shaped ribs on the upper faces and the ends of the adjacent bricks; the headers have transverse ribs and projections, with recesses to correspond.

29,040.—LIFT VALVES: *J. W. Lee.*—For taps and cocks in which no packing is employed. The conical end of the spindle makes contact with a cup-shaped valve that falls into the inlet and has a flange to engage with a seat, whilst the spindle's upper part is provided with a long screw thread to engage with the cap screwed into the top of the casing. The valve, made separately, can be easily replaced.

29,122.—CEMENTS AND NON-CONDUCTING COMPOSITIONS: *J. Grange.*—For the manufacture of refractory bricks, slabs, and blocks, pipe and similar coverings, retorts, saggers, furnace and similar linings, and of cement or mortar for pavements, walls, &c., North Staffordshire pig-iron blast-furnace slag is pulverised; to each hundredweight is added 1½ gallons of gas-tar, and, it may be, 2 lbs. or 3 lbs. of starch and 12 lbs. of salt. For cement the ground slag may be mixed with sand or ashes, and in covering steam-pipes, a layer of ordinary non-conducting composition may, in the first instance, be employed.

29,144.—WINDOWS: *R. H. Stanbridge.*—A band or leather strap passes over a drum or pulley in a recess in the pulley-stile and suspends a weight, one end of the strap is turned around a metal pin fixed inside a groove in the sash-stile and is fastened by a screw, the other looped end of the strap is secured to the weight by a pin and screw.

29,157.—EXTINGUISHING FIRE: *H. M. Kettelwell.*—The inventor's object is to utilise carbonic acid gas, produced by fermentation in distilleries, breweries, &c., for the extinction and prevention of fires; he collects the gas from the fermenting-vat by means of a hopper fitted below an overflow opening made in the vat's side, the gas, by reason of its own weight, collects in the hopper, whence it is conveyed away for storage and use.

29,180.—SECONDARY BATTERIES: *P. Brandt.*—The accumulator comprises a porous clay cell placed in a glass vessel and having removable clay partitions, into which dip, alternately, the teeth or lugs of the lead combs; a paste, made of an alkaline sulphate mixed with calcium oxalate or tartrate and sulphate together with sulphuric acid and an oxide of lead, is laid in the compartments; to accelerate its solidification glycerine and butyric acid are added.

29,206.—DAYLIGHT REFLECTORS, AND FIREPROOF WINDOW-SHUTTERS: *A. J. Brown.*—A pivotted frame holds the reflector, which has a backing of asbestos cardboard or other fireproof material, and can be turned to the required angle, or raised at night-time as a shutter by means of a chain passing over a pulley in the window-head.

29,224.—VALVES, COCKS, &C.: *A. Wren.*—To facilitate the repair or cleaning of a screw-down valve is provided a plug cock beneath, having an opening or series of holes; the spindle passes down into a cap that a pinching-screw locks into position, or a stuffing-box is substituted for the cap.

29,250.—PIPE JOINTS WITH FERRULES: *H. Saunderson & J. Barker.*—The invention is described as being particularly suitable for coupling leaden water-pipes, &c., without brazing or soldering; it consists in expanding the ends of the tubes, fitting them with a correspondingly-shaped ferrule, and in placing collars over each end of the tubes, through the flanges of which the tightening-bolts are thrust; in the case of angle-joints the flange is formed in the casting, and, if the pipe is to be attached to a cistern, a nut secures the ferrule within the cistern.

29,254.—SURVEYING INSTRUMENTS: *E. N. Sennett.*—The instrument may be used in the hand or upon a stand for measuring vertical and horizontal angles; to a horizontal graduated semi-circle is affixed an arch, and on it turns a slotted and graduated arc, which works over a platform; one telescope turns in azimath about the central axis, and can be moved in altitude, carrying a pointer with it; another telescope is fixed at an angle of 45 deg. at one end of the semi-circle's diameter, to receive rays reflected in the horizon glass and index glass, the latter whereof is carried by an index arm; the instrument is further provided with reading-glasses, verniers, and fine adjustments, whilst the reflecting or the direct vision contrivances may be neglected.

29,337.—MEASURING DISTANCES ON MAPS: *J. H. Gray.*—As it runs over the distance to be measured the wheel acts upon a registering wheel by means of pins that project from one face, the latter wheel is adjusted in the line of its axis by turning a screw, and the projecting pins vary in their lengths so that the instrument can be set for different scales. The pins of the measuring wheel may act directly upon the registering wheel or each actuation of the latter can be audibly announced by means of a metal tongue.

29,375.—TREADS FOR STAIRS, SUBWAYS, SEWER OUTLETS, &C.; *J. T. Andrews & G. E. Montagnon.*—A sheet of thin metal is stamped or embossed in dies, a deep depression being first made by the removable portion of the top die, and other more shallow depressions being made afterwards, and punched with holes in their centres; then blocks of suitable material are let into, cemented, screwed, or otherwise secured to the depressions, and grooves are formed between them. For pavement lights the blocks are formed of transparent materials.

29,811.—EARTHENWARE PIPE JOINTS: *M. Yarrow.*—Cement is poured into semi-annular recesses which are formed in the spigot and socket alike, and its escape is prevented by putting oakum, &c., in grooves or indents on each side of the joint, for a firm footing a flat-bearing surface is made on the socket's under-side.

30,004.—WASTE FITTINGS FOR SINKS: *A. A. Russell.*—A screwed spigot secures to the strainer plug a circular strainer plate, radially slotted, and another perforated plate is mounted to turn on the strainer plate in such a way as to cover or uncover the slots. When the sink is empty the perforated plate can be turned to cover the apertures and to so trap noxious vapours in the waste pipe.

30,026.—ARTIFICIAL STONE, BUILDING BLOCKS, &C.: *Grünzweig & Hartmann.*—A building stone, described as porous and light, similar to cork, is moulded from a mixture of clay, kieselguhr, and finely-divided vegetable substances—say, peat, pith, cork, husks, &c.—and the blocks are heated in order to burn the organic constituents.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

April 6.—By Messrs. WICKENDEN (at Hastings).

Bexhill, Sussex.—"The Denbigh Hotel," f.	£4,900
Hooe, Sussex.—"The Red Lion" p.-h., f.	3,650
Ninfield, Sussex.—"The United Friends" b.-h., f.	2,000
Sidley, Sussex.—"The Sussex Inn" and two cottages, f.	3,800
Hastings, Sussex.—Wellington-ter., "The Hastings Castle Inn," f.	1,400
Rye, Sussex.—"The Cinque Ports Arms Hotel," f., r. 100*l.*	3,000

By HAWKINS & EDGECOMBE.

Catford.—1, 3, 5, and 7, Charsley-rd., u.t. 78 yrs., g.r. 27*l.*, r. 105*l.* 4*s.*	£830

By STIMSON & SONS.

Homerton.—47, 49, 51, and 53, Swinnerton-st., f., r. 124*l.*	1,580
Camberwell.—225 to 231 (odd), Southampton-st.; 1 to 15, Riddell-st., also Caroline Cottage in rear, u.t. 13½ yrs., g.r. 17*l.* 10*s.*	1,120
69, 71, and 75, St. George's-rd., u.t. 62 yrs., g.r. 15*l.* 10*s.*	870
Peckham.—8, Hill-st., u.t. 26½ yrs., g.r. 8*l.* 5*s.*	200
Norwood.—136, Gipsy Hill, u.t. 67 yrs., g.r. 10*l.*, e.r. 55*l.*	300
Stockwell.—46 and 54, Mordaunt-st., u.t. 66½ yrs., g.r. 10*l.* 5*s.*, r. 55*l.*	555
Southwark.—42, Lambeth-rd., f., r. 45*l.*	650
Crouch Hill.—34, Blythwood-rd., u.t. 76½ yrs., g.r. 8*l.*, e.r. 50*l.*	500
Marylebone.—82, Balcombe-st., u.t. 21½ yrs., g.r. 10*l.*, e.r. 60*l.*	440

By NEWBON, EDWARDS, & SHEPHARD.

Highbury.—103, 105, 107, 111, and 115, Highbury-hill, u.t. 78 yrs., g.r. 8*l.* 10*s.*, r. 233*l.*	3,445
92, 94, 100, and 102, Highbury-hill, u.t. 78 yrs., g.r. 20*l.* 7*s.*, r. 181*l.*	2,305
Highbury-hill, l.g.r. 15*l.* 7*s.*, u.t. 78 yrs.	310
89, St. Paul's-rd., with range of stabling and workshops known as "Keen's-yd," u.t. 46 yrs., g.r. 50*l.*	3,660
Hornsey.—75, Myddelton-rd., u.t. 68 yrs., g.r. 7*l.* 7*s.*	155
Hoxton.—58 and 60, Rushton-st., and 16, Newport-st., u.t. 10 yrs., g.r. 10*l.*	280
Barnsbury.—43, Lofting-road, u.t. 9¾ yrs., g.r. 5*l.*	125
Holloway.—85, Yerbury-rd., u.t. 71 yrs., g.r. 5*l.* 10*s.*, r. 28*l.*	265

April 7.—By CHURCHER & GALE (at Exeter).

Bow, Devon.—Common Moor Estate, 77 a. 1 r. 8 p., f.	785

By BRIDGMAN & SON.

Standon, Herts.—Standon Farm, 178 a., f. and c.	2,350

By HARDS & BRADLY.

Greenwich.—76 and 78, Church-st., also l.g.r. 8*l.*, u.t. 25½ yrs., g.r. 14*l.*	150
Lee Green.—1, Brightfield-rd., u.t. 83 yrs., g.r. 3*l.* 3*s.*, r. 40*l.*	310
Fulham.—6, 6a, 8, 8a, 10, 10a, 12, and 12a, Furness-rd., u.t. 82½ yrs., g.r. 21*l.*	735
Greenwich.—7 and 8, Orchard-hill, f.	570
Lewisham.—3 and 4, Jerrard-st., u.t. 64 yrs., g.r. 5*l.*	545

By ROBINS, GORE, & MERCER.

Stockwell.—69 and 73, Studley-rd., u.t. 38 yrs., g.r. 8*l.*, r. 84*l.*	820

By FIELD & SONS.

Blackfriars.—87, Upper Ground-st., c., r. 45*l.*	800
1, Queen's Arms-court, c.	200
Peckham.—138 and 140, Commercial-rd., also Bridge Wharf in rear, u.t. 47 yrs., g.r. 12*l.*, r. 105*l.*	675

April 10.—By NEWMAN CHENNELLS.

Shepherd's Bush.—112 and 114, Goldhawk-rd., f., r. 140*l.*	2,265

By MAY & ROWDEN.

Holloway.—Upper Tollington-pk., l.g.r. 91*l.* 8*s.*, u.t. 68 and 69 yrs., g.r. 50*l.*	800

By FRED VARLEY.

Tooting.—1 and 2, Maria-villas, f., r. 36*l.* 8*s.*	510
Holloway.—7, Roden-st., u.t. 61 yrs., g.r. 6*l.*, e.r. 36*l.*	355
Hornsey.—79, Sydney-rd., u.t. 75 yrs., g.r. 8*l.*, r. 34*l.*	310
Wood Green.—Alexandra Park-rd., four plots of building land, f.	360
Finchley.—Finchley Pk., Holly Dene, f., e.r. 50*l.*	800

By S. WALKER & CO.

Hampstead.—30, Fellows-rd., u.t. 65½ yrs., g.r. 10*l.* 10*s.*, r. 130*l.*	1,190

By JONES, SON, & DAY.

Bethnal Green.—5 and 6, Hunslett-st.; also l.g.r. 3*l.*, u.t. 26½ yrs., g.r. 9*l.*	325
Mile End.—Canal-rd., f.g.r. 29*l.*, reversion in 17½ yrs.	530
Limehouse.—2 and 4, St. Anne-st., f.	280
St. George's East.—10, 12, 14, and 16, Bostock-st., f.	720
Leytonstone.—608, High-rd., f., e.r. 36*l.*	525

By G. B. SMALLPEICE (at Stratford).

Stratford, 45, Martin-st., u.t. 58 yrs., g.r. 6*l.*, r. 26*l.*	190
4, Martin-st., u.t. 58 yrs., g.r. 20*l.*, r. 50*l.*	470
43 and 45, Station-st., u.t. 58 yrs., g.r. 10*l.*	290
7 and 9, Frederick-st., u.t. 58 yrs., g.r. 10*l.*, r. 36*l.*	300
224, High-st., u.t. 64½ yrs., g.r. 10*l.*, r. 30*l.*	250
242, 244, and 246, High-st., u.t. 64½ yrs., g.r. 36*l.*, r. 100*l.*	950

By FRANK LLOYD (at Wrexham).

Broughton, Denbigh.—Brynmally and 91 a. 0 r. 15 p., f.	4,000
A plot of land with buildings and cottages thereon, 1 a. 0 r. 10 p., f.	500
Gwersyllt, Denbigh.—A plot of land with buildings, 2 a. 1 r. 28 p., f.	200

April 11.—By DEBENHAM, TEWSON, & CO.

City of London.—Poultry, f.g.r. 780*l.*, reversion in 47½ yrs.	30,250
Wimbledon.—Merton-rd., f.g.r. 36*l.*, reversion in 83 yrs.	990

By R. STAFFORD CHARLES.

Hyde Pk.—4, Hyde Pk. Gate-mews, f., e.r. 60*l.*	750

By E. HILL CLARKE.

Streatham.—35 and 37, Lewin-rd., f., r. 100*l.*	1,455
93 and 95, Lewin-rd., f.	1,080

By FRANCE & SONS.

Vauxhall.—9 and 11, Tate-st., u.t. 48 yrs., g.r. 10*l.*	430
Camberwell.—6, Benhill-rd., u.t. 72 yrs., g.r. 5*l.*, r. 27*l.*	310
Kennington.—3, Bowden-st., u.t. 34 yrs., g.r. 10*l.*, r. 45*l.*	320

By G. F. HARRINGTON.

Drury-lane.—36, Great Wild-st., f., e.r. 100*l.*	995

By WESTON & SONS.

Brixton.—57 and 59, Arlingford-rd., u.t. 75 yrs., g.r. 17*l.*, r. 80*l.*	655
35, Lorn-rd., u.t. 27 yrs., g.r. 12*l.*	220
Stockwell.—38, Dalyell-rd., u.t. 65½ yrs., g.r. 6*l.*, r. 32*l.*	320

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Laying-out Cliff	Clacton U.D.C.	75*l.*; 50*l.*; and 25*l.*	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Flints and Granite	Aylesbury R.D.C.	F. B. Parrott, Bourton-st. Aylesbury	April 25
Road Works	Norton R.D.C.	E. A. Sampson, Surv. 17, York-st. Sheffield	do.
Fire Station, Weld-road	Birkdale U.D.C.	J. Smallshaw, Town Hall	do.
Additions to School, Greenhill	Harrow (U.D.) S.B.	Houston & Houston, Archts. 5, York-bldgs. Adelphi, W.C.	do.
Retort House, &c.	Oldham Corp.	A. Andrews, Gas Offices, Oldham	do.
Repairing Bridges	Hereford C.C.	A. Dryland, County Surv. Shire Hall, Hereford	do.
Extension of Goods Station, Caryl-st. Liverpool	L. & Y. Ry. Co.	The Engr. Hunt's Bank, Manchester	do.
Alterations to Passenger Station, Lowmoor	do.	C.W. Bayley, Hunt's Bank, Manchester	do.
Surveyor's Materials	Stretford Gas Co.	H. Kendrick, Gas Engr. Gasworks, Stretford	do.
Sixteen Houses, May-st. Crosland Moor, Hudder-field	.....	A. Shaw, Archt. Golcar	do.
Road Widening, Winford	Long Ashton R.D.C.	J. Hawkins, Surv. Brockley, near Bristol	do.
Surveyor's Materials	Herts C.C.	U. A. Smith, Surv. 41, Parliament-st. S.W.	April 26
Tramway Street Works	Hull Corp.	A. E. White, Engr. Town Hall	do.
Broken Granite (920 tons)	Long Crendon R.D.C.	H. Howland, Surv. Chinnor-road, Thame	do.
Station Houses	Donegal Railway Co.	J. Barton, C.E. Exchange-buildings, Dundalk	do.
House, Cleator Moor	.....	W. Thompson, 42, Crossfield-road, Cleator Moor	do.
House, Cleator Moor	Mr. Rudd	E. Jackson, C.E. Whitehaven	do.
House, Cleator Moor	W. Thornthwaite	do.	do.
Road Materials	Great Crosby (Lancs.) U.D.C.	W. Hall, C.E. Council Offices	do.
Sewerage Works, Dorking-road	Tunbridge Wells Corp.	Boro Surv. Town Hall	April 27
Drainage Works, Middlesbrough	.....	R. Lofthouse & Sons, Archt. 62, Albert-road, Middlesbrough	do.
School, Rhostyllen	Bersham Sch. Bd.	Harris & Lash, Archt. Wrexham	do.
Sewerage Works	Tring (Herts) U.D.C.	J. J. Taylor, Engr. 1, Victoria-st. S.W.	do.
School, near Brigg	Messingham Sch. Bd.	A. W. Bristow, Sch. Bd. Offices, Messingham	do.
House, Roath Park	Cardiff Corp.	W. Harpur, C.E. Town Hall	do.
Farm Buildings, Flamborough	Rev. H. L. Ogle	J. Earnshaw, Archt. Wellington-rd. Bridlington Quay	do.
Two Houses, Milner-st. Lockwood	.....	J. B. Abbey & Son, 34a, New-st. Huddersfield	do.
Additions to Electric Light Station	Dundee Gas Commrs.	W. Alexander, Arct. Dundee	do.
Granite Road Metal	Lichfield R.D.C.	R. J. Knapman, Surv. London-rd. Lichfield	do.
Seven Houses, Batley Carr	.....	B. Watson, Archt. Bradford-rd. Batley	do.
Pair Villas, Frostoms, Workington	.....	W. G. Scott & Co. Archt. Victoria-bldgs. Workington	do.
Four Houses, Warwick-rd. Carlisle	.....	J. Briggs, Market-street, Carlisle	April 28
Additions to Hospital	Ilkeston Hospital Committee	C. W. Hunt, Archt. 122, Station-rd. Ilkeston	do.
Sewers	Gorton (Lancs.) U.D.C.	C. J. Lomax, C.E. 37, Cross-st. Manchester	do.
Water Supply	Wishaw (N.B.) Comrs.	W. R. Copland, C.E. 145, West Regent-street, Glasgow	do.
Public Baths, Union-st.	Chester Corp.	Douglas & Minshull, Archt. Abbey-sq. Chester	April 29
*Alterations at Factory and Works	Sheffield United Gas Light Co.	F. W. Stevenson, Offices, Commercial-st. Sheffield	do.
Two Houses, Claypath, Durham	J. Heslington	G. Ord, Archt. 16, The Avenue, Durham	do.
Drainage Works, Garlands, Carlisle	.....	J. Little, Engr. Viaduct-chmbrs. Carlisle	do.
*Paving, &c. Works	Beckenham U.D.C.	J. A. Angell, Council Offices	May 1
*Removal and Reconstruction of Bridge	Paddington Vestry	G. Weston, Vestry Hall, Harrow-rd. W.	do.
Additions to Hotel, Gwbert-on-Sea	.....	C. M. Richardson, Cardigan	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Four Houses, Lisburn	H. G. Larmour	H. Hobart, Archt. Dromore, co. Down	May 1
Sewage Tanks	Merthyr Tydfil U.D.C.	T. F. Harvey, Engr, Town Hall	do.
*Isolation Hospital	Reigate T.C.	W. H. Prescott, Market Hall, Redhill	do.
*Sewage Works	Mountain Ash U.D.C.	J. Mansergh, 5, Victoria-st. S.W.	do.
*Structural Steel Work of Tower	Morecambe Tower Co. Ltd.	R. T. Gifford Read, 1, Gt. Chapel-st. Westminster	do.
Sewers	Chelmsford R.D.C.	Taylor & Co. C.E. 27, Gt. George-st. S.W.	May 2
Road Works	Hayward's Heath U.D.C.	E. Waugh, Boltro-rd. Hayward's Heath	do.
Bridge, Salcott	Lexden and Winstree R.D.C.	J. Ennals, Surv. Copford	do.
*Filter Beds	Clacton U.D.C.	Taylor, Sons, & Santo Crimp, 27, Gt. George-st. S.W.	do.
*Victoria Stone Paving	Tottenham U.D.C.	P. E. Murphy, 712, High-rd. Tottenham	do.
*Paving Works	Hove Corp.	Surveyor, Town Hall, Hove	May 3
*Iron Pipe Sewers, Manholes, &c.	Watford U.D.C.	D. Waterhouse, 14, High-st. Watford	do.
*Isolation Hospital	Southgate U.D.C.	Council Offices, Palmer's Green, N.	do.
*New Chapel at Asylum	Glamorgan County Asylums	Giles, Gough, & Trollope, 28, Craven-st. W.C.	May 4
Granite (1,400 yards)	Bexhill U.D.C.	G Ball, Surv. Town Hall	do.
*Heating, &c. Laundry, &c. Fittings, and Iron Bedsteads	Southampton Corp.	W. B. G. Bennett, Municipal Offices	May 5
*Norwegian Granite Kerb	Wanstead U.D.C.	Council Offices	do.
*Naval Reserve Buildings, Altcar, nr. Liverpool	.....	Director of Works, 21, Northumberland-av. W.C	do.
*School and Caretaker's House	Admiralty	A. J. Dunn, 31, St. Michael's-square, Gloucester	May 6
*Electric Light Station	Gloucester S.B.	Boro. Surv.	May 8
*Public Offices and Hall	Darlington Corp.	B. Woollard, 16, Finsbury-circus, E.C.	do.
Electric Light Station	Ilford U.D.C.	Boro. Surv. Town Hall	do.
*Electric Light Wiring and Fittings	Darlington Corp.	A. Saxon Snell, 22, Southampton-bldings, W.C.	do.
*Alterations and Additions to School	St. Marylebone Gdns.	Beazley & Burrows, 17, Victoria-st. S.W.	May 9
*Fire Station, St. Mary Cray	Westminster Vestry	W. J. Winter, Station-rd. Sidcup	do.
*Extension of Electric Light Station	Bromley R.D.C.	H. Mair, Town Hall, Hammersmith	May 10
*Making-up Roads	Hammersmith Vestry	W. Menzies, Englefield Green, Surrey	May 13
*Three Detached Villa Blocks	Egham R.D.C.	J. Cresswell, Moot Hall, Newcastle-on-Tyne	May 15
*Repairs to Schools, Brentwood	Northumberland C.C.	Sec. Education Fund, Archbishop's House, Carlisle-place, S.W.	No date
*Seven Story Factory, Norwich	.....	E. Boardman & Son, Queen-st. Norwich	do.
Shop, Whetley-lane, Manningham	A. J. Caley & Son, Ld.	H. Ardaker, Archt. Ivegate-chmbrs. Bradford	do.
Shop and House, Salen, N.B.	.....	T. J. A. Armstrong, Glenborrodale, Fort William	do.
Foundations, &c. Lands-lane, Leeds	.....	W. A. Hobson, Archt. 82, Albion-st.	do.
Drainage Works, Love-lane	Heasle (Yorks.) U.D.C.	P. T. Runton, Surv. Savile-chmbrs. Hull	do.
Street Works, West Bridgford, Notts.	.....	J. Howitt, Archt. Bentinck-buildings, Nottingham	do.
Sixteen Houses, Raven Nook, Carlisle	J. Graham	P. & J. W. Hayton, Surv. Bank-st. Carlisle	do.
Water Works, Lasswade, N.B.	.....	D. B. Todd, 79, High-st. Bonnyrigg	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Surveyor of Highways	Thingoe R.D.C.	250*l.* per annum	April 25
*Stable Manager	Cnty. Boro. West Ham	200*l.* per annum and house	do.
*Architect's Assistant	Battersea Vestry	250 rising to 300*l.* per an.	April 26
*Works Manager	Cnty. Boro. of West Ham	500*l.* per annum	April 29
*Inspector of Roads	Islington Vestry	50*s.* rising to 60*s.* per week	do.
*Surveyor	Lee B. of W.	300*l.* per annum	May 1
*Clerk of Works	Camberwell Vestry	4*l.* 4*s.* per week	do.
*Engineer and Surveyor	Plumstead Vestry	500*l.* per annum	May 4
*Clerk of Works	County of Southampton	3*l.* per week and travelling expenses	No date

Those marked with an asterisk (*) *are advertised in this Number.* *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxii. *Public Appointments, pp.* xix. & xxii.

By W. HOUGHTON.

Walthamstow.—Salisbury-rd., a plot of building land, f. £150
Addison-rd., a block of building land, f. 700
Norfolk-rd., a block of building land, f. 300

By ROGERS, CHAPMAN, & THOMAS.

West Kensington.—26 and 35, Fairholme-rd., u.t. 73 yrs., g.r. 19*l.* 10*s.*, r. 146*l.* 700
Pimlico.—21 and 25, Claverton-st., u.t. 34 yrs., g.r. 20*l.*, r. 130*l.* 950
63, Ranelagh-rd., u.t. 34 yrs., g.r. 9*l.*, r. 50*l.* 435
Sydenham.—22, West-hill, u.t. 48 yrs., g.r. 10*l.*, r. 75*l.* 760
Upper Norwood.—52, 54, and 56, Belvedere-rd., u.t. 53 yrs., g.r. 14*l.* 10*s.*, r. 124*l.* 960
Catford.—Waterloo-pl., Vine Cottage, f. 128

By THOMAS WOODS.

Fortis Green.—5, Clissold Cottages, u.t. 15 yrs., g.r. 2*l.* 8*s.*, r. 34*l.* 205
Heston, Middlesex.—"The Courtenay Arms" b.-h., with ten cottages adjoining, u.t. 12 yrs., g.r. 8*l.* 500
Feltham, Middlesex.—Tachbrook-rd., nine plots of building land, f. 170
Finchley.—Albert-villas, f.g.r. 6*l.* 6*s.*, reversion in 78 yrs. 160

By ALFRED RICHARDS (at Hoddesdon).

Hoddesdon, Herts.—High-st., a house and shop, f., r. 45*l.* 990
Lord-st., seven freehold cottages 1,000

By R. BOND & SON (at Ipswich).

Combs, Suffolk.—The Cedars Estate, 170 a. 3 r. 21 p., f. and c. 4,800

By H. J. CHEFFINS (at Saffron Walden).

Thaxted, Essex.—Buckingham's Farm, 119 a. 3 r. 27 p., f. 920

By F. R. RAVENHILL (at Bradford-on-Avon).

Bradford-on-Avon, Wilts.—The Fairfield House Estate, 52 a. 1 r. 34 p., f. £4,300

By ORGILL, MARKS, & ORGILL (at Masons' Hall Tavern).

Finsbury Pk.—Green Lanes, "The Brownswood Park Tavern," u.t. 60½ yrs., g.r. 2*l.* 16,050

By ALFRED FLOWER (at Masons' Hall Tavern).

City of London.—Camomile-st., "The Salisbury Arms" p.-h. and shop adjoining, u.t. 25 yrs., r. 410*l.* till 1903 and 450*l.* thereafter, with goodwill 5,100

April 12.—By A. A. HOLLINGSWORTH.

Commercial-rd. East.—Nos. 228 and 228A, f., r. 90*l.* 1,400
Haggerston.—17, Whiston-st., u.t. 38 yrs., g.r. 1*l.* 135

By MARTIN, CLARKE, & CO.

Ilford, Essex.—1 to 8, Bank Villas, f. 2,150
Notting Hill.—34, St. Charles'-sq., u.t. 73 yrs., g.r. 12*l.* 12*s.*, e.r. 100*l.* 690

By RUTLEY, SON, & VINE.

St. Pancras.—191, Euston-rd., u.t. 8¼ yrs., g.r. 15*l.* 15*s.*, e.r. 80*l.* 220
Homerton.—6 and 22, Marian-st., f. 300

By T. G. WHARTON.

Tottenham.—46 and 48, Vicarage-rd., f., r. 54*l.* 10*s.* 735
Fulham.—21, Palace-ter., u.t. 86 yrs., g.r. 8*l.*, r. 32*l.* 415

By DOUGLAS YOUNG & CO.

Clapham.—13 and 15, Macaulay-rd., u.t. 73 yrs., g.r. 21*l.*, e. r. 150*l.* 2,300

By HEPPER & SONS (at Stockton-on-Tees).

Stockton-on-Tees, Durham.—Lawson-st., "The King's Head Inn," f. £4,650

April 13.—By PERCY H. CLARKE.

Barnsbury.—101, Lofting-rd., u.t. 43½ yrs., g.r. 7*l.*, r. 30*l.* 250
Fulham.—4, Fulham-pk-gdns., u.t. 63 yrs., g.r. 7*l.*, r. 40*l.* 560

By G. ERNEST CLARKE.

Walthamstow.—26, Orford-rd., f., r. 50*l.* 970
8 to 16 (even), Canning-rd., u.t. 97½ yrs., g.r. 25*l.* 600
2 and 3, Comely Bank Villas, f. 500

By MARK LIELL & SON.

Bow.—1 to 8, Mary-st., u.t. 47½ yrs., g.r. 44*l.* 1,035
Stratford.—40 and 41, Carpenters'-rd., u.t. 63 yrs., g.r. 9*l.* 320

By C. C. & T. MOORE.

Camberwell.—159, 161, and 163, Camberwell New-rd., also the "Red Lion" b.-h., f., r. 141*l.* 3,000
Holborn.—Great Saffron-hill, "The One Tun" p.-h., f., r. 150*l.* 5,500
Holborn.—9, Gray's Inn-passage, f., r. 50*l.* 460
Bromley-by-Bow.—3 to 19 (odd), Furze-st., u.t. 65 yrs., g.r. 30*l.* 1,300
Stockwell.—48 to 56 and 60 to 64 (even), Lingham-st., f. 2,515
Mile End.—128, Jamaica-st., u.t. 13 yrs., g.r. 4*l.* 155

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	£8	0	0	0	0	0
Teak, E.I.	load	11	15	0	16	15	0
Sequoia, U.S., ft. cube		1	9	0	2	0	0
Ash, Canada, load		4	0	0	5	5	0
Birch, do		3	10	0	5	10	0
Elm, do		4	12	6	5	15	0
Fir, Dantsic, &c.		1	10	0	3	10	0
Oak, do		3	5	0	4	0	0
Canada		4	10	0	6	5	0
Pine, Canada red		0	0	0	0	0	0
Do, yellow		4	7	6	6	5	0
Lath, Dantsic, fathom		4	10	0	5	10	0
St. Petersburg		4	0	0	6	10	0
Wainscot, Riga, &c., log		3	15	0	6	5	0
Odessa, crown		3	15	0	6	5	0
Deals, Finland, 2nd and 1st std. 100		9	15	0	10	5	0
Do., 4th and 3rd		9	15	0	10	5	0
Do., Riga		8	5	0	9	5	0
St. Petersburg, 1st yellow		11	15	0	14	5	0
Do., 2nd yellow		10	15	0	12	5	0
Do., white		9	15	0	11	15	0
Swedish		9	15	0	16	15	0
White Sea		10	15	0	18	0	0
Canada Pine, 1st		18	15	0	25	5	0
Do., do., 2nd		13	15	0	17	0	0
Do., do., 3rd, &c.		6	15	0	10	0	0
Do. Spruce, 1st.		8	5	0	10	5	0
Do., do., 3rd and 2nd		7	0	0	8	5	0
New Brunswick		7	0	0	7	15	0
Battens, all kinds		5	0	0	16	0	0
Flooring boards, sq., 1 in., prep., 1st		0	12	0	0	15	3
Do., 2nd		0	10	6	0	12	3
Other qualities		0	5	3	0	6	6
Cedar, Cuba, ft.		0	0	4	0	0	4½
Honduras, &c.		0	0	4	0	0	4½
Mahogany, Cuba		0	0	5½	0	0	7½
St. Domingo, cargo av.		0	0	5	0	1	3
Mexican do., do.		0	0	3½	0	0	4
Tanasco, do., do		0	0	4	0	0	6½
Honduras, do.		0	0	4½	0	0	6
Box, Turkey, ton		6	0	0	15	0	0
Rose, Rio		7	0	0	16	0	0
Bahia		6	0	0	14	0	0
Satin, St. Domingo, ft.		0	0	6	0	1	0
Porto Rico		0	0	9	0	2	0
Walnut, Italian		0	0	3	0	0	7½

METALS.

IRON—Pig, in Scotland	ton	2	15	0	0	0	0
Bar, Welsh, in London		6	0	0	6	5	0
Do. do. at works in Wales		5	15	0	5	17	6
Do. Staffordshire, in London		6	5	0	7	10	0
COPPER—British cake and ingot		78	0	0	78	10	0
Best selected		79	10	0	79	10	0
Sheets, strong		81	0	0	83	0	0
Chili bars		74	12	6	0	0	0
YELLOW METAL	lb.		6½d.			7d.	
LEAD—Pig							
Spanish	ton	14	10	0	0	0	0
English Com. Brands		14	15	0	0	0	0
Sheet, English, 6 lbs. per sq. ft. and upwards		15	15	0	0	0	0
Pipe		16	5	0	0	0	0
ZINC—English sheet	ton	30	0	0	0	0	0
Vieille Montagne		31	0	0	0	0	0
Spelter		27	17	6	28	0	0
TIN—Straits		114	5	0	0	0	0
Australian		114	5	0	114	15	0
English Ingots		117	0	0	118	0	0
Banca		114	0	0	0	0	0
Billiton		113	0	0	0	0	0

OILS.

Linseed	ton	17	17	6	0	0	0
Cocoanut, Cochin		29	10	0	0	0	0
Do. Ceylon		25	15	0	0	0	0
Palm, Lagos		24	10	0	0	0	0
Rapeseed, English, pale		22	10	0	0	0	0
Do. Brown		20	15	0	0	0	0
Cottonseed ref.		16	10	0	17	0	0
Oleine		17	0	0	19	0	0
Lubricating U.S.		0	5	3	0	7	6
Do. Black		0	5	0	0	6	6
TAR—Stockholm	barrel	1	6	6	0	0	0
Archangel		0	18	0	0	0	0
Turpentine		32	15	0	33	0	0

TO CORRESPONDENTS.

J. H.—J. S. & Son (Amount should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

AXBRIDGE.—For additions, &c., to casual wards at Weston-super-Mare, for the Board of Guardians. Mr. A. Powell, C.E., 3, Unity-street, College Green, Bristol:—

T. H. Brown	£945	G. Sprake	£795
H. A. Forse	900	H. Cook, Bristol*	680
Lloyd & Son	875	J. Solway	620
Dubin	800		

BARNSLEY.—For the erection of school buildings, Staincross, for the Darton School Board. Messrs. Senior & Clegg, architects, 15, Regent-street, Barnsley:—

Masonry.—Walker & Blackburn, Barnsley*	£1,106 17
Carpentry and Joinery.—W. G. & L. England, Barnsley*	790 0
Plumbing and Glazing.—W. Dransfield, Barnsley*	149 0
Plastering.—M. Fleming, Barnsley*	78 10
Slating.—M. Fleming, Barnsley*	147 0
Painting.—Snowden & Son, Barnsley*	33 0
Heating Apparatus.—Seward & Co., Lancaster*	72 0

BRIDLINGTON QUAY.—For the erection of three houses, Cambridge-street, for Messrs. Hardwick & Sons. Messrs. Brodrick, Lowther, & Walker, architects, Bridlington Quay:—

J. Sawdon	£1,260	W. Barnes	£1,118
E. Wilson	1,188		

All of Bridlington Quay.

BRISTOL. — For erecting the Star Life Offices, Bristol:—

E. Walters	£16,535	Stephens, Bastow, & Co., Ltd.	£14,749
J. Perkins	16,100	G. Humphries	14,600
Cowlin & Son	15,859	A. J. Beaven	14,200

BURTON-ON-TRENT.—For the erection and completion of four shops, offices, concert-hall, and premises in Byrkley-street, for the Burton-on-Trent Co-operative Society, Limited. Mr. R. Stevenson, architect, Imperial-chambers, High-street, Burton-on-Trent. Quantities by the architect:—

W. A. Stevenson	£7,595 0	A. Geary	£7,392 0
G. Hodges	7,580 0	Lowe & Sons*	7,380 0
H. Edwards	7,570 0	R. Kershaw (informal)	7,333 7
G. H. Adams	7,400 0		

CAERPHILLY.—For the erection of an hotel, Aber, for Mr. Wm. Davies. Mr. T. Thomas, architect, 17, Quay-street, Cardiff. Quantities by architect:—

E. R. Evans & Bros., Cardiff £3,950

[There were twelve tenders in all.]

CASTLETON (Derbyshire).—For the execution of sewage works, for the Chapel-en-le-Frith Rural District Council. Messrs. Sterling & Swann, engineers, Town Hall, Chapel-en-le-Frith:—

Etheridge & Clark, Norfolk-street, Manchester* £2,908 14

DUDLEY.—For the erection of two houses, Grange-road, Dudley, for Mr. J. Whorton. Mr. A. Ramsell, architect, Dudley:—

Love and Flint, Dudley* £1,260

DUDLEY.—For the erection of four cottages, Scott's Green, Dudley, for Messrs. Chilton, Tonks, & Bowen. Mr. A. Ramsell, architect, Dudley:—

Seckerson Brothers, Holly Hall, Dudley* .. £1,000

DUDLEY.—For alterations to works, London Fields, Dudley, for Messrs. Newey & Homer. Mr. A. Ramsell, architect, Dudley. Quantities by the architect:—

Holland & Sons	£425 0	Dorse & Co., Cradley Heath*	£387 10
Whittaker & Co.	400 0		

DUDLEY.—For the erection of one house, North-street, Dudley, for Mr. W. Bagnall. Mr. A. Ramsell, architect, Dudley:—

Seckerson Brothers, Holly Hall, Dudley* .. £485

GREAT BADDOW.—For a cottage at Falcon's Farm. Mr. R. Mawhood, architect, Chelmsford:—

H. Potter	£255	J. Ely	£205
W. Fincham	250	Weight, Springfield*	192
F. Johnson	225		

KIRKCALDY.—For the construction of a road, the building of a viaduct, steel-girder bridge, and other relative works, for the Commissioners. Mr. W. D. Sang, C.E., Kirkcaldy:—

Waddell & Son	£16,556	7	11	Brunton & Sons	£15,124	0	5
Macdonald	16,552	6	8	Menzies	14,807	7	1
Mackay & Son	15,921	6	4	Cousin	14,632	2	4
Wishart	15,811	7	9	Gray & Co.	14,418	13	8
Smith & Sons	15,412	2	4	Fraser, Junr., Kirkcaldy*	13,384	10	4

LONDON.—For rebuilding 1, 2, and 3, Brabant-court, E.C. Mr. C. Watkins, architect:—

	Superstructure.	Foundations.	Total.
Foster & Dicksee	£25,998	£3,783	£29,781
Ashby & Horner	22,745	3,202	25,947
Lawrence & Sons	22,410	3,122	25,532
Colls & Sons	21,937	2,914	24,851
Ashby Bros.	21,892	2,954	24,846
F. & H. Higgs	21,749	2,836	24,585
W. Downs	21,736	2,767	24,503
Patman & Fotheringham	21,642	2,793	24,435
H. Lovatt	21,639	2,763	24,402
J. Greenwood	21,287	2,662	23,949

LONDON.—For the erection of warehouses on the site of Nos. 73 to 81, Clifton-street, and the City Stone Yard, Finsbury, E.C., for the Home and Colonial Stores, Limited. Mr. Robert Willey, architect, 33, New Bridge-street, E.C. Quantities by Mr. A. Howard, the Outer Temple, E.C.:—

		Extra for Glazed Brick Front.
Allen	£25,355	£1,000
Larter	25,000	350
Holland & Hannen	24,914	550
Woodward	24,290	470
Clarke & Bracey	24,031	500
Lascelles	23,881	456
Dove Bros.	23,355	550
Patman & Fotheringham	21,791	491
Smith & Son	21,269	450

LONDON.—For alterations, &c., to No. 9, Pembridge-place, W., for Mr. J. S. Birkett. Messrs. W. H. Ward & R. Marchant, architects, 64, Charlotte-street, Fitzroy-square, W.:—

		Reduction for Omission of Panelling.	Allowance for Old Bricks.
Gates	£1,293	£27 0	£1 10
Quibell	1,227	22 12	1 10
Christie	1,180	27 0	0 15

LONDON.—For rebuilding No. 6, Great Marlboro'-st., W. Messrs. W. G. Bartleet & Son, architects:—

Webber	£4,739	Ashby Bros.	£4,587
Carmichael	4,720	Bywaters	4,489
Holloway Bros.	4,700	Lindon	4,303
F. & H. Higgs	4,690	Patman & Fotheringham	4,281
F. & F. Wood	4,680		

LONDON.—For the erection of workshop and conservatory at 145, Finchley-road, N.W. Mr. A. J. Wade, architect:—

Godson & Sons	£360	F. T. Chinchen*	£295
Beer & Gash	298		

LONDON.—For ice-making rooms and alterations to Warwick Farm Dairies, Elgin-avenue, for Messrs. Welford & Sons, Ltd. Mr. Edward Vigers, architect. Quantities by Mr. Chas. W. Stephenson, 38, Parliament-street, Westminster:—

Tennant & Co.	£1,088	Parkinson & Son	£994
Cooper, Palmer & Co.	1,047	A. J. Thompson	956
William Downs	1,045	F. T. Chinchen*	939
George Neal	1,005		

LONDON.—For the formation of new road on the Kingswood Park Estate, Acton Green, W., to be called Bolton-road. Mr. Edward Monson, architect and surveyor, Acton Vale, W.:—

Nowell & Co., Earl's-court* £1,125

LONDON.—For the re-erection of the "Railway Hotel," Acton, for Mr. A. T. Savigear. Mr. Edward Monson, architect, Acton Vale, W.:—

Lascelles & Co.	£8,426 0	Beer & Gash	£7,775
Patman & Fotheringham	8,251 0	Gould & Brand	7,689
W. Wallis	8,248 16	Chessum & Son	7,458
C. Ansell	8,181 0	T. Nye, Ealing Green, W.*	7,278
Antill & Co.	8,000 0	W. Blackburn	7,060
Godson & Son	7,963 0		

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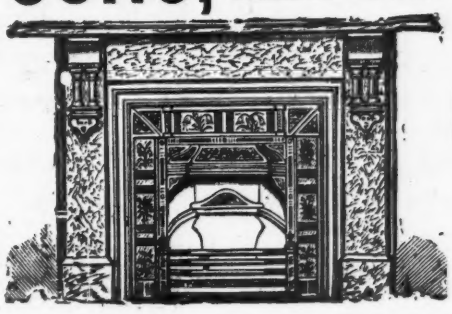

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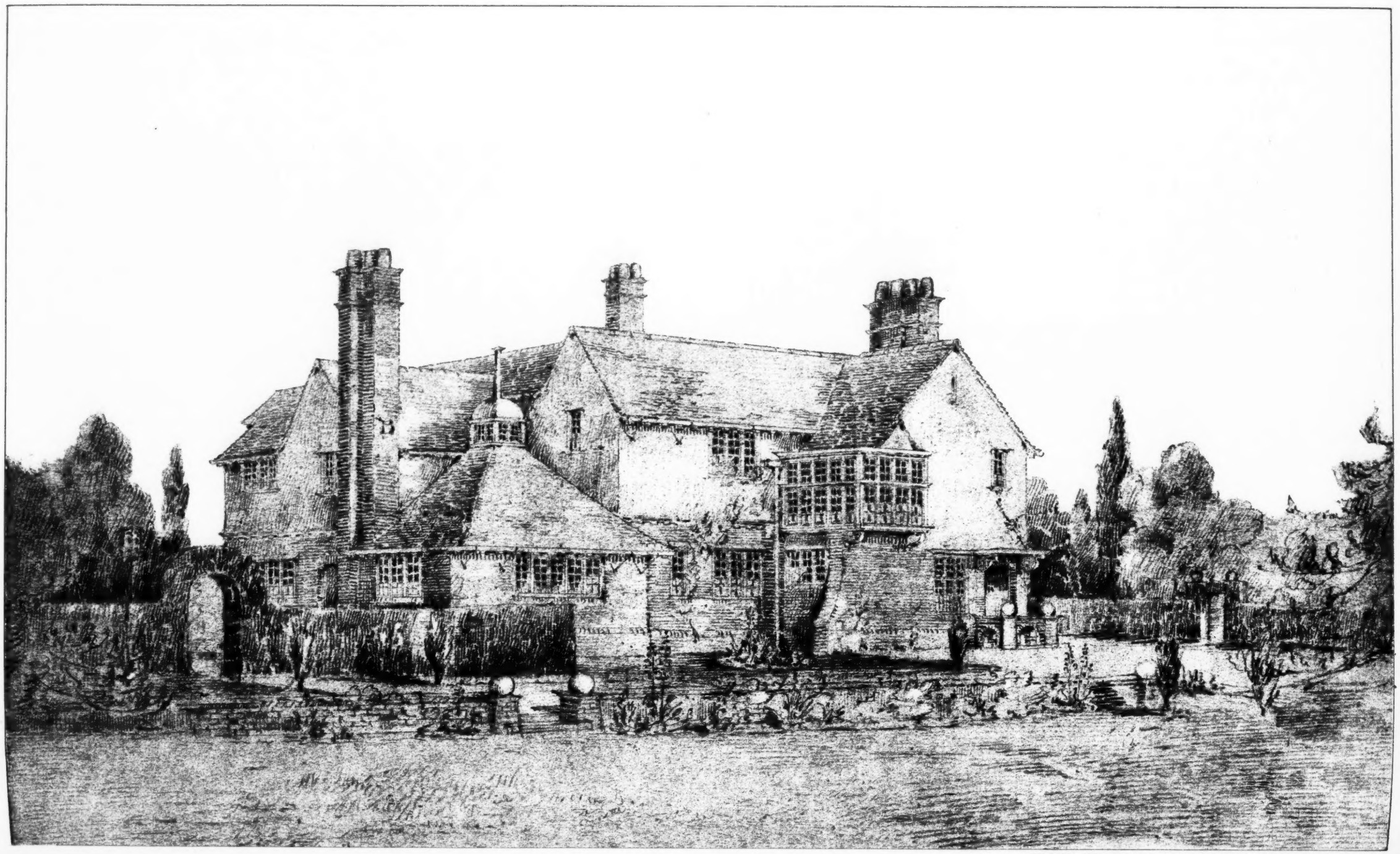

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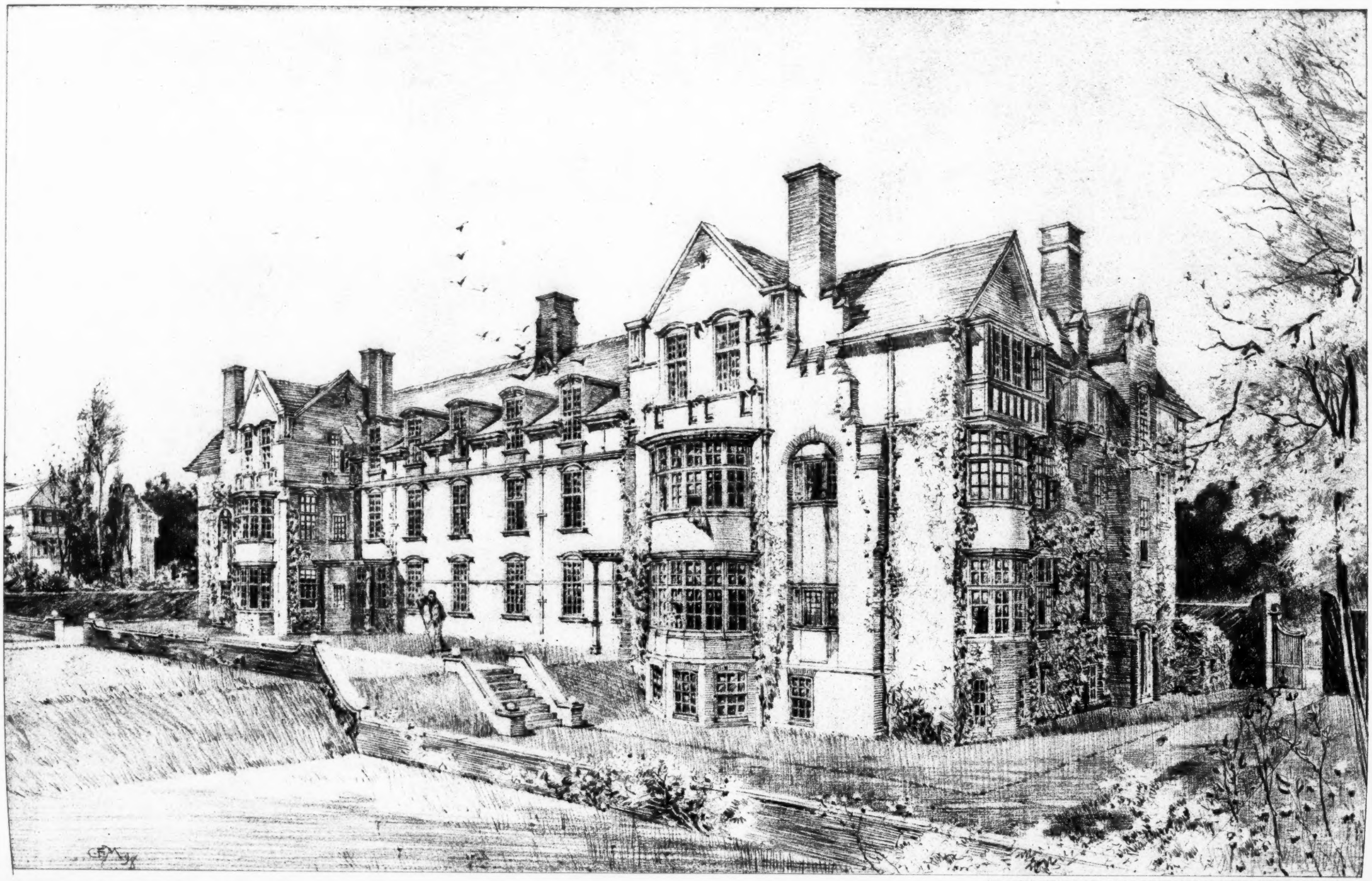

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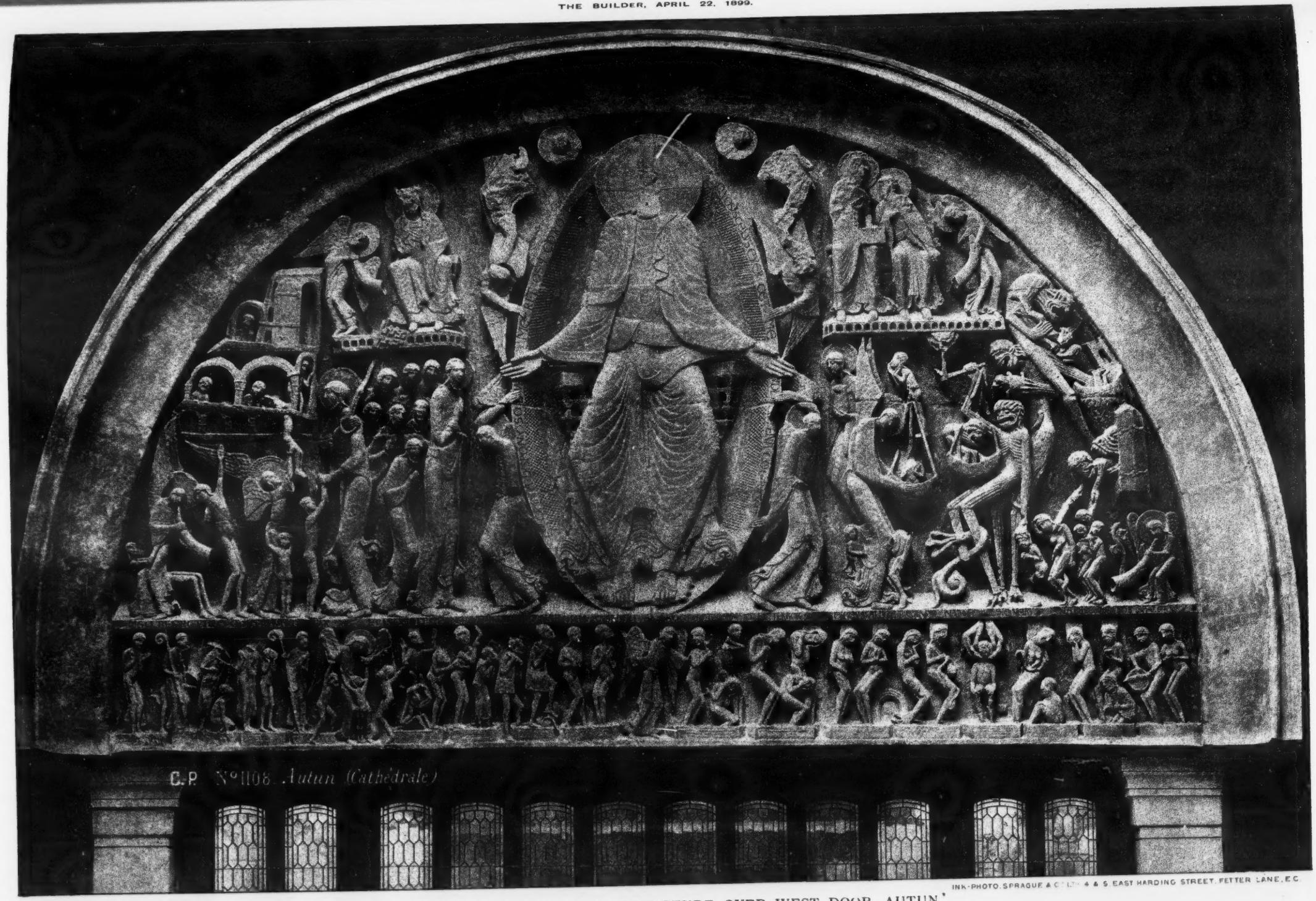

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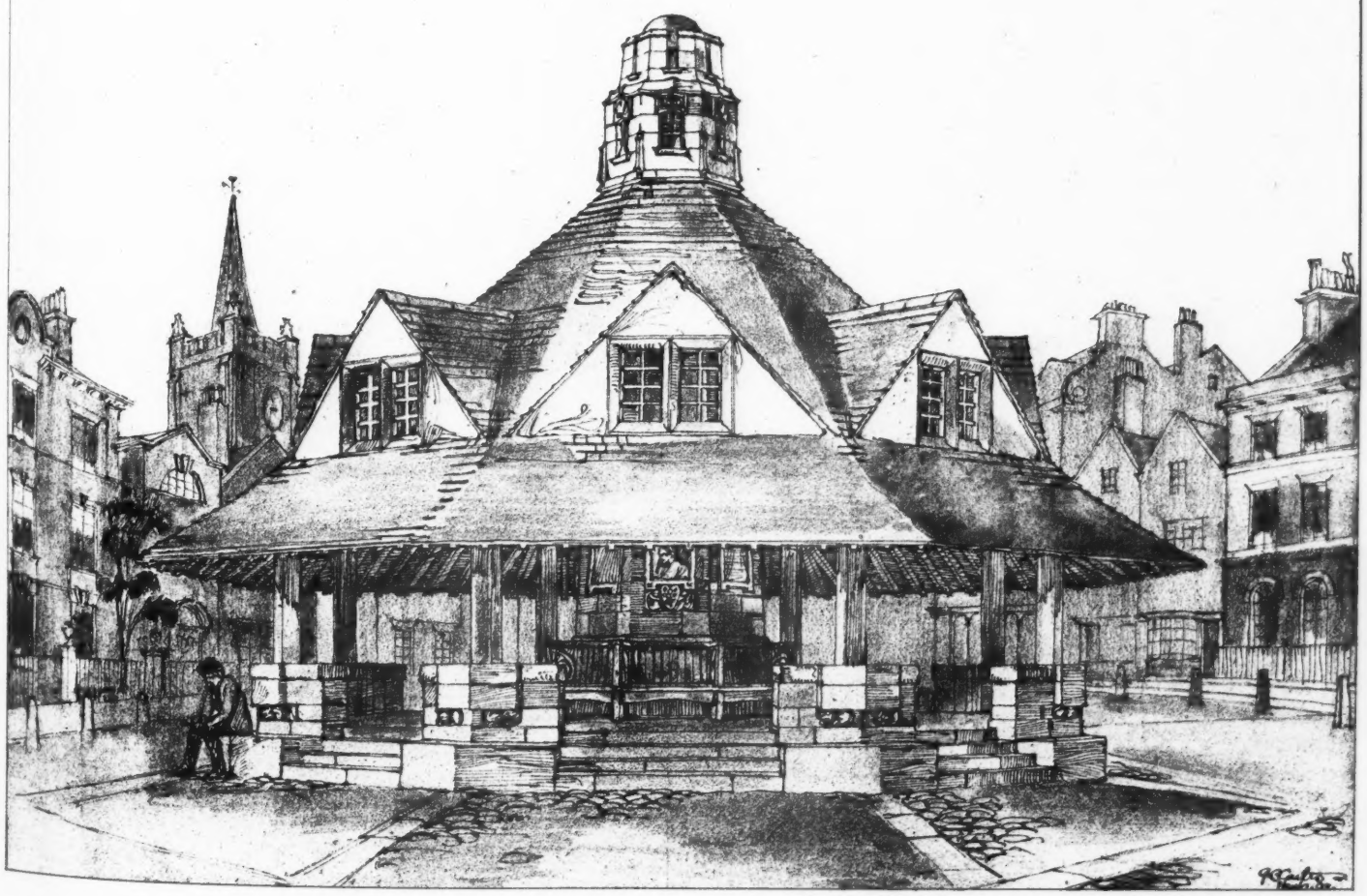

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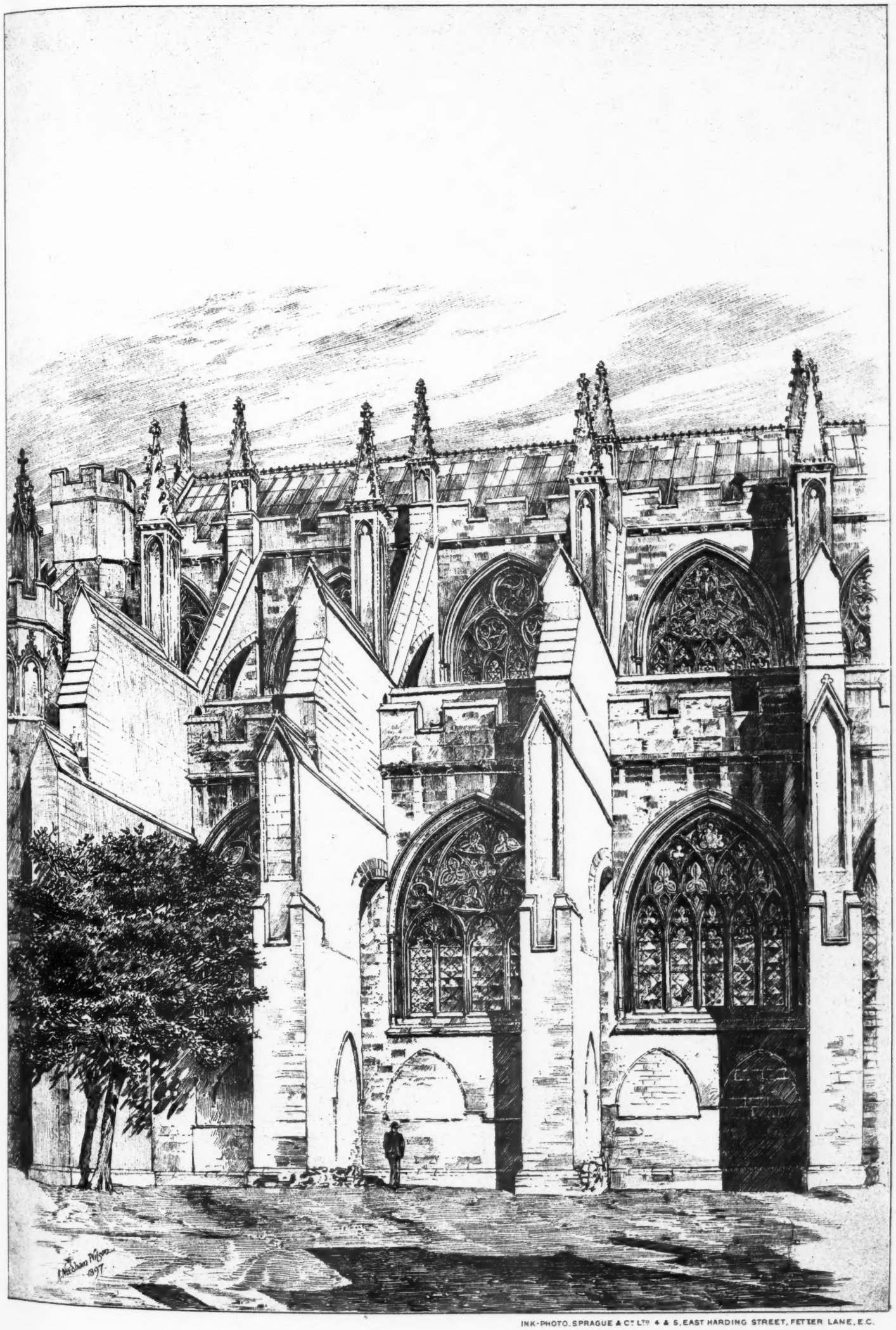

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